DOCUMENT RESUME

ED 242 026 EA 016 513

AUTHOR	Salser, Mark R.
TITLE	Individualized Learning Center Management: A User's Guide.
INSTITUTION	Educational Research Associates, Portland, OR.
REPORT NO	ISBN-0-89420-236-7
PUB DATE	83
NOTE	54p.; Portions may be marginally legible.
AVAILABLE FROM	National Book Company, 333 Southwest Park Ave., Portland, OR 97205-3784 (1-5 copies, $4.95 ea., 6 or more, $3.96 ea.)
PUB TYPE	Guides - Non-Classroom Use (055)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Audiotape Recorders; *Audiotape Recordings; Carrels; Cost Effectiveness; Educational Equipment; Elementary Secondary Education; Guidelines; *Individualized Instruction; *Instructional Materials; *Learning Laboratories; Multisensory Learning; Public Relations; Purchasing; *Teaching Methods; Workbooks
IDENTIFIERS	PF Project

ABSTRACT

Guidelines for replicating the Educational Research Associates' (ERA) individualized instruction system are presented. The ERA system uses audio recordings in place of traditional lectures for student instruction. The audio recordings are augmented by a printed syllabus or workbook which requires substantial notetaking and/or problem solving so that students are presented with a visual stimulus as well as an aural stimulus. Topics covered in this guide include: (1) background on individualized instruction and the ERA system; (2) the advantages of individualized instruction for teachers and students; (3) a description of the ERA instructional program and materials; (4) suggestions for purchasing and arranging hardware and furniture for an Individualized Learning Center; (5) an analysis of costs based upon the number of students and course offerings involved; (6) guidelines for managing the facility; (7) recommendations for teaching strategies; (8) suggestions for public relations; and (9) a 28-item bibliography of suggested readings on individualized instruction and student learning. A subject index is provided. (DC)

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INDIVIDUALIZED LEARNING CENTER MANAGEMENT

by

MARK R. SALSER

EDUCATIONAL RESEARCH ASSOCIATES
A Nonprofit Educational Research Corporation

U.S. DEPARTMENT OF EDUCATION
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I N D I V I D U A L I Z E D

L E A R N I N G C E N T E R

M A N A G E M E N T

A User's Guide

Mark R. Salser

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Preface

First of all, we should make the distinction between "individualized" instructional materials and the Individualized Instruction system of management itself.

Of primary importance is the system -- the methods and techniques for managing an Individualized Learning Center, Learning Lab, Media Center, Resource Center (often called a Library), or some combination of these. Materials alone cannot make a successful Individualized facility; only when all staff members hold a philosophical commitment to the I.I. system of teaching/learning can the management of an instructional facility be said to be truly Individualized. Many thousands of schools, using properly Individualized materials improperly, have been disappointed in the results of their "experiment."

To achieve successful results, it is necessary to reject the restrictions placed on educators in the past -- often by themselves -- concerning how the process of instruction can and cannot be conducted. Many talented and able teachers struggle daily within the confines of traditional lecture classroom methods. The excesses of the 60s and 70s -- open classrooms, ungraded classes, television lectures, team teaching, etc. -- were symptoms of the frustration teachers felt in their inability to do all they wished to do, within the restrictions of the current system.

Educational Research Associates' Individualized Instruction concepts make teachers more productive by placing greater emphasis on instructional materials and technology, in order to make more effective use of the teacher's time.

Almost any instructional materials -- ranging from "teaching machines" and programmed texts, through videotapes, discs, and computers -- could be considered "individualized" when used in a genuinely Individualized environment. These materials may be purchased either commercially or prepared by school staff members. And, uninformed criticism notwithstanding, the basic issue is not the usefulness of these new instructional technologies -- few today will dispute their effectiveness under "limited" conditions

-- the issue is which technologies are most effective, at the lowest cost, and how widespread their use ultimately will be. It would behoove us all to learn more about these technologies, because, despite myriad shortcomings -- technical, economic, and social -- limiting their use today, we all will be using them extensively in years to come.

But, it is also the philosophical framework within which new technology is brought into play, and how it is used, that is at question. Without that commitment to the I.I. system mentioned above, however -- as when its use is imposed upon unwilling and/or unknowledgeable teachers -- not even the most carefully designed and prepared materials can be truly Individualized.

Moreover, few of the hundreds of publishers of "individualized" materials actually meet ERA's criteria for Individualized Instruction. Often a teacher will use these materials, in traditional instructional classes, under the mistaken impression that they alone constitute I.I. Then, when their use fails to live up to (quite reasonable) expectations, I.I. is erroneously labelled as ineffective or impractical.

Why should others conform to ERA's standards? Quite simply, because we have been working with these concepts -- and their practical applications -- for longer than anyone else. In facilities operating for more than a decade, ERA-developed methods have shown marked gains in student achievement (77% in one study), while costs declined just as dramatically (33% or more).

Under genuine I.I. conditions, it should be the goal of every administrator or Learning Center manager to provide the necessary unlimited support conditions for whatever methods and materials -- no matter how diverse -- which staff members must use to ensure the success of each student. Individualized Instruction philosophies constitute such a system . . . in which facilities and schedules may be easily varied to accommodate experimental and innovative projects. If these prove successful, I.I. management can then adapt to provide permanent support for them.

These management procedures enable each student: 1) To progress through a subject at his/her own rate; 2) To increase both retention and comprehension of subject matter; 3) To assume more personal responsibility for his/her learning; 4) To work on a one-to-one basis with the teacher; 5) To start a subject, interrupt a subject (for illness, etc.), and complete subjects, on an individual basis.

They enable each teacher . . . to become a true professional -- a manager of learning, an educational clinician . . . who is there to confer with and consult -- in private; to guide (when necessary) -- but in private; to evaluate -- in private; to encourage and inspire -- in private.

Gone are the days when new procedures required extensive special funding to support them -- even after they may have proved their

value. Gone, too, are the days when such projects died with their funding. I.I. facilities have enormous potential for flexibility in dealing with deserving new ideas.

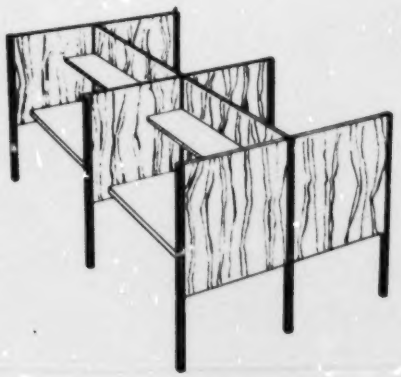
Given a facility using genuine Individualized management procedures, then, it can use nearly <u>any</u> instructional materials and methods . . . but it will always operate <u>most</u> effectively when using fully "Individualized" materials as its primary instructional sources.

This GUIDE will take the position that the reader is interested in learning how to manage an Individualized Learning Center using one or more Individualized Instruction Programs which meet ERA guidelines. Whenever possible, we will also discuss how the use of other materials may be integrated into a truly Individualized facility. The GUIDE is intended to help teachers, administrators, and aides . . . design, manage, and supervise the most effective Individulized facility possible, whether starting from scratch or modifying an existing one.

We will first discuss instructional materials for Individualized facilities; then equipment you might use, and its management; management of the staff and students within an Individualized environment; and then offer a few suggestions and cost illustrations for initiating your own Individualized Learning Center.

The information and advice following are compiled from ERA's more than two decades of experience in designing effective -- yet low-cost -- instructional facilities, and preparing more complete Individualized Instruction Programs (for more years) than any other single organization in America.

Mark R. Salser
Associate Editor



Introduction

Education today is conducted in much the same way it has been for thousands of years . . . by one individual, who possesses some particular bit of knowledge, standing before a group of students . the process. It wasn't too unwieldy, though, since only the wealthy were able to educate their children; and teachers rarely had to deal with very many students at one time.

During just the past two centuries, however, the educational system has undergone a great deal of change. First, the Industrial Revolution made it possible for people to become more productive, and began to concentrate them in larger urban areas. It became progressively less necessary for young children to work, freeing them for other things . . . like school. Then, the great experiment in the United States -- universal education for the masses -- caused first hundreds, then thousands, and finally millions of children to enter our school system.

Under prior conditions, it was quite easy for teachers to give attention to the needs of each individual student; it wasn't difficult for the wealthy to pay teachers to devote their time to only a few students. But in the new school system of the late nineteenth and twentieth centuries, most parents didn't have such resources. Hence, it became necessary for each teacher to serve more students.

The system expanded but changed little otherwise: Teachers still lectured, and students still listened . . . and learned. Teachers had no alternative but to lecture, and students -- of necessity -- learned. They <u>had</u> to, education was a <u>survival</u> skill. Those who possessed greater knowledge were, in general, in a better position to evaluate and reason, and thereby discover the fastest, easiest, safest, and most productive solution to a problem facing them.

Today, however, this is not so important. Our pervasive technology has removed much of the immediacy from these problems; there is always someone <u>else</u> who can solve a problem. Students no longer see the logic behind learning the "mere facts" of English, History, Foreign Languages, and the Sciences.

To the extent that we have given in to this turn toward "watering down" our curricula, we have failed in our duty as educators.

The one characteristic that man possesses, which distinguishes him from animals, is his <u>mind</u> -- his ability to <u>reason</u>. Every failure to achieve our greatest potential is a denial of our "humanness."

* * *

1) Teachers spend close to 80% of their class time lecturing. Yet, as great an investment of time as this represents, it is not enough; students invariably need assistance which can take all of a teacher's time in and out of class, and

more. Lacking that -- as evidenced by declining college-entrance examination scores and national literacy rates -- students simply do not learn.

2) Only in teachers can you find the knowledge and resources to ensure the success of each and every student; but teachers cannot exercise those talents if they must waste their time removed and distant from students, at the front of the classroom, lecturing.

How can we resolve this daily dilemma of teachers -- that they must lecture, but are more effective in the time they do not lecture?

The root of the problem is that the lecture process -- at its best -- is extremely inefficient. Studies indicate student retention of "live" lectures from 10% to as low as 2%. Not an efficient use of a highly skilled teacher, is it?

What we need is some scheme which provides for both "1" and "2" above, and which allows students to progress independently -- unlike a teacher-dominated lecture -- at a rate based upon individual mastery of subject matter. It would also help if students to spent more time working on a one-to-one basis with teachers. Presto, Individualized Instruction!

Unfortunately, all of this takes time . . . of which teachers already have too little. And Individualized Instruction only makes matters worse, since it means fewer students per teacher (and higher costs), doesn't it?

In a word, no! This is one of the greatest misconceptions to plague contemporary education. In fact, this concept of individualized instruction -- like many others -- is quite wrong.

* * *

In the early 1960s Educational Research Associates began developing instructional methods using available technology to assist the teacher in presenting routine instruction. By using tape recorders, record players, Dictaphones, etc. to present information, we first began turning over routine drills to these machines, so that instructors had more time in which to observe students more closely. We then decided that, by having students listen through earphones -- instead of playing recordings out loud, before a class as a whole -- what one student heard would not interfere with what others were doing, and we could have groups or individual students study different material simultaneously.

We called this system "Monitor Instruction." Today there are several kinds of hardware systems designed to deliver information in this manner, either permanent, hard-wired facilities or, more commonly, closed-loop broadcast sytems. Most "language labs" fall into this category.

Despite its merits -- and its clear improvement over traditional methods -- ERA determined Monitor Instruction to be less than ideal . . . because it still required that students must progress through a subject at the same rate. Whether many students are affected, or only two, it makes no difference; it is too many. Therefore, ERA ceased use of such methods only a few years later.

What we did do was to make a transition to the beginnings of genuine Individualized methods by giving students control over the operation of the instructional medium. Individuals studied lessons independently and progressed as quickly as they were able.

Finally, we recognized that there was little difference between students studying a variety of lessons in a single subject, and doing the same in two or three or ten subjects simultaneously, as long as the supervising instructor possesses sufficient knowledge to answer questions about all of the subjects involved. And now we are no longer talking about just Individualized Instruction, we are discussing Individualized Learning Center Management.

Individualized Instruction provides a framework to systematize the educational process, the central theme of which is flexibility and adaptability. It is an environment capable of changing continually to meet the needs of each student, with the primary goal of ensuring mastery of every subject.

The purpose of Individualized Instruction is to eliminate the burden of repetitive preparation and presentation that instructional lectures normally place upon the teacher . . . by useing technology to transfer information traditionally presented in a live lecture. Given so much more time free of that burden, teachers have more opportunities to sit down with individual students and discuss their questions privately, and at length.

Genuine Individualized Instruction doesn't take time, it makes time. I.I. gives teachers a chance to practice their craft -- to teach students, not subjects.

* * *

Because they are studying independently, some students progress satisfactorily without more than periodic progress checks from an instructor. But teacher assistance is immediately available, and most will take advantage of it at least occasionally.

Individualized Instruction is not a substitute for the presence and active participation of a teacher. Too many parents and educators alike have assumed that the use of an I.I. Program precludes the active participation and supervision of teachers in the instructional process . . . or, at least, makes them superfluous. Thus, ERA's I.I. methods have been characterized as "cold and dehumanizing." This is 180 degrees from the truth . . . and a gross misrepresentation of I.I. If a Learning Center is managed properly, the teacher -- freed from routine lecturing --

has infinitely more time to work privately with individual students.

An Individualized Instruction Program is merely another device...one more tool designed to aid the teacher, albeit a particularly valuable one. Moreover, despite the greater emphasis I.I. places on well prepared instructional materials, I.I. needn't be either expensive to initiate nor complex to manage.

The greatest obstacle proponents of Individualized Instruction have had to overcome, however, has not been a refusal or even a lack of interest in using I.I.; rather, it has been its widespread misuse. Hundreds, even thousands of teachers have attempted to use something they believed was Individualized, but which, in fact, often bore little resemblance to ERA's I.I. concepts.

Again, the purpose of the I.I. Program is to obviate that preponderance of teacher time now spent planning and presenting lectures. But keep in mind that the Program itself is merely a part of the Individualized Instruction philosophy. Teachers cannot "kick back" and relax, while students listen to recordings, watch videotapes, or play with computers. In fact, under Individualized conditions, teachers will be quite busy, and will spend more time supervising, directing, and ensuring students' progress, than ever before was possible.

I.I. teachers must possess solid academic backgrounds and superior communication skills in order to fill this demanding role. They are, as teachers always should be, the key -- the catalyst -- to an ever-changing, fluid instructional process. Many talented teachers have developed very successful schools under most unlikely conditions. I.I. merely provides greater opportunity to observe students closely . . . and then make use of the knowledge thus gathered to answer questions more fully, and motivate, assist, encourage, tutor, prescribe, "enrich," counsel, stimulate, remediate . . . etc.

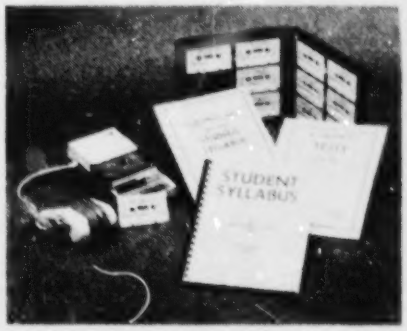
Several research studies have confirmed that students ask several times fewer questions (and teachers themselves ask many times more questions, in a traditional classroom) than they believe.

In an Individualized Learning Center, however, where student shyness is not such a barrier, and teachers can draw out each student at some length, instruction can become exciting indeed. It is easy to become a "question junkie," observing students closely in order to ferret out their smallest apprehensions or misunderstandings. But it can be an exciting and rewarding habit.

The Instructional Program

On an immediate recall basis, most individuals remember only 10% of the relevant facts in what they read. This increases to 20% of what they hear, and 30% of what they see -- actively. When more senses are involved at once, however, retention may be as much as 50% of what they simultaneously see and hear.

ERA chose to develop instructional materials which use aural and visual stimuli, working together. We also design such correlated audio and print materials to require substantial notetaking and/or problem solving, because introduction of kinesthetic factors (sensation of bodily movement) even further improves retention.



Therefore, the instructional programs Educational Research Associates recommends for use with Individualized methods consist of very carefully prepared narratives or recorded lectures, correlated with a printed syllabus or workbook.

Recordings introduce subjects, topic by topic, and discuss them point by point, much more systematically than possible in "live" lectures. Moreover, whether commercially acquired or prepared by your own school or district personnel, authors can take much more care in designing and composing each lecture than can a teacher, who must prepare and present several "live" lectures daily.

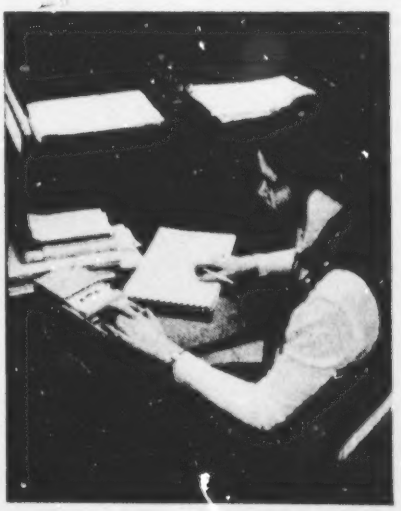
Recorded lessons are thus more concentrated than live lectures, so one recording may contain as much information as two or three days of live lectures. Many Programs, therefore, do not require a great number of recordings; In choosing one, be careful to determine whether this explains any apparent brevity, or whether it is due to inadequate content. Despite the brevity, you should choose Programs which employ carefully measured repetition and review, to encourage the highest possible retention.

Learning Centers should endeavor to see that students complete lessons without interruption or distraction, except when they encounter questions or problems and must turn to teachers for help. In lecture classes, the concentration of students is often broken by questions which do not apply to their own needs, disruntive behavior of others, or merely sunlight through a window. Studying independently, students are less likely to be affected by the questions or behavior of others. And, while they may later ask the very questions which are a distraction now, it will be when <u>they</u> are <u>prepared</u> to understand the answer, not according to the timetable of others.

* * *

The audio narrative and the Student Syllabus are integral parts of any instructional Program; their functions are interdependent, and they <u>must</u> be used together, for maximum effectiveness -- such as

keeping students' minds on what they are studying. (See I.I. System/Learning Center Management)



The first functions of a student syllabus or workbook are to serve as an outline for written notes, and to provide as much basic visual stimulus as possible. A Syllabus should demand a maximum of accurate notetaking of "key" points by students. Through carefully managed interaction of recording, syllabus, student (and when necessary the teacher), instruction becomes an active process, rather than -- as in most schools today -- a passive one. Thus, it is the interaction of audio and visual components, combined with the kinesthetic value of notetaking, which achieve ERA's goals of increased retention and comprehension.

The visual component of the Program comes primarily from the information students take down in their notes. Generally, illustrations will only consist of simple graphs and charts or line drawings. But don't fool yourself, multi- and full-color illustrations may look pretty, but do not add sufficient value to warrant their cost. Instead, they should be reserved for instances where they are actually <u>needed</u>.

Neither does ERA endorse widespread use of visual aids such as slides, filmstrips, movies, videotapes, television, etc., except when circumstances -- or the subjects themselves -- require extensive visual. But, the number of visual aids necessary to truly Individualize -- certainly far beyond what is necessary using ERA-style materials -- greatly complicates management.

Specifically, slides, filmstrips, videotapes, and computers cost from <u>$500</u> to <u>$15,000</u> <u>per Individualized station</u>, compared with $50 to $70 per station for simple audio Programs. Moreover, Monitor Instruction arrangements, like TV lectures and closed-loop broadcast (as well as slides, filmstrips, and videotapes presented before a whole class), while less expensive, require that students progress through a subject at the same rate.

Furthermore, the complexity of these materials almost demands the use of specially designed and constructed study and storage facilities in order to isolate students and protect hardware and instructional materials. Altogether, the complexity these extensive visual aids bring to the operation of a Learning Center -- plus costs associated with software acquisition, storage, security, maintenance, and replacement -- are prohibitive.

There is no question that <u>appropriate</u> visual aids can assist the instruction. However, instructional managers must weigh benefits against vastly increased complexity and expense. The object of ERA's research, after all, is to provide methods that are, first, effective, and, given that, economical. Upon careful consideration

then, the contribution of such visual aids -- although measurable and sometimes valuable -- is not enough to warrant their cost as primary instructional media.

Although not practical as large-scale, primary instructional sources, they can be used, sparingly, whenever students encounter occasional lessons or subjects for which enhanced visual displays are essential. This would not mean that entire Individualized installations should be thus equipped -- but only that a few stations would be available for individual students, as they encounter specific topics or subjects which require such aids.

Materials developed according to ERA guidelines, however, merely require a modest audio cassette player as hardware support for the I.I. Program -- contained on relatively compact cassette recordings.

* * *

Instructional narratives should contain neither unreasonably difficult nor simplistic vocabulary when presenting new ideas and concepts to students. Authors and publishers of Individualized materials need not "write down" to the lowest common denominator. When students encounter terms they do not yet know (if they are not already explained in the audio), they need only stop the recording and check with a reference book or instructor.

But if we educators "protect" students too much from progressively more difficult vocabularies and concepts, they can never learn them. In a traditional lecture environment, it is impossible for teachers to pause time and again to make sure each student understands new concepts, without adversely affecting the progress of other students. I.I. easily allows for such initial lack of knowledge.

A narrative's pace should be moderate, but this is not particularly critical, as long as its content is coherent and audio quality is acceptable. An average "live" lecturer speaks four to six times as fast as the average person can write longhand; even narrators who make an effort to speak slowly and distinctly will still be saying several times more than students can get on paper. But because each I.I. student is in full control of the medium of instruction, if a lecture moves too quickly (as it undoubtedly will, even for the most able students), each individual has the option to stop the recording, rewind, and listen to all, or a portion of the lecture again. There is reason to hope, then, that significant numbers of I.I. students will take meaningful notes, thus substantially improving retention, and the likelihood that they can actually master a subject. To that end, students will -- and should frequently be encouraged to -- take advantage of this opportunity as often as necessary.

Most educators today recognize the need to establish -- by some means -- how well students have mastered their subjects. The third important part of a properly Individualized Learning Center, then, is testing. Unfortunately, testing for Competency-Based

Based schools or states often takes place only near the end of a student's high school career -- or, at best, yearly. Neither of these is adequate.

Whether a Program comes complete with them or not, it is imperative to test students frequently enough to diagnose problems before they become unmanageable. The only currently popular instructional strategy which approaches ERA's Individualized Instruction standards, is known as Mastery Learning. It consists of traditional lecture instruction, but also uses many brief tests -- as often as once or twice each week in each subject -- to assess student mastery over a topic . . . just as many teachers do in traditional classes today. But what can "traditional" teachers do when they find students who don't understand?

But under Mastery Learning conditions, classes don't progress to the next topic until all students have demonstrated proficiency with the current one. Otherwise, as is often the case now, students and teachers only discover too late that there is makeup work to do...which could take many weeks or months. Mastery Learning allows nobody to be "left behind" -- students learn correctly the first time, or everybody waits until they do.

Although Mastery Learning is a step above traditional contemporary methods, because of its rigid, structured procedures, it is also less adaptable than even Monitor Instruction, much less Individualized methods. "Everybody waits" is its weak point. Better still, if Mastery Learning made allowances for students with wide ranges of abilities . . . without placing limitations on how fast or slowly students might progress through the subject. Well, for the past fifteen years, we have called this . . . Individualized Instruction.

* * *

In order to make this possible, students should always have access to the recorded lectures they need, when they need them. This means that -- in all but the smallest facilities -- multiple copies of recordings must be available to assure that students will have that access.

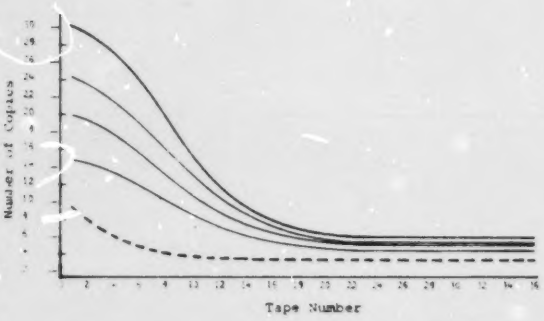
Most publishers of Individualized Programs sell them by the "Set" -- including one copy of all recordings and related print materials. Thereafter, most either sell duplicates as needed, permit them to be made (for a royalty fee) by those schools having facilities to do so, or both. (See Appendix -- Memorandum of Agreement)

Recorded instructional programs are copyrighted, so the options above must be followed if schools are to acquire copies legally. (One of the most difficult problems facing publishers of I.I. materials is the unauthorized duplication and distribution of their recorded products.) Only a small -- and decreasing -- percentage of I.I. publishers permit unrestricted duplication of their recordings.

Most responsible publishers will either sell copies or permit their duplication, for a fee. Some will charge the same for duplicate recordings as for the first set; but most commonly make discounts to a fraction of the original/initial cost. This, while protecting their copyrights, gives publishers an equitable return for the use of their materials -- and may be less expensive for schools than purchasing recordings outright. It also provides at least a measure of choice for schools -- particularly those with the resources to invest in sometimes expensive duplication equipment.

There are three methods of stocking duplicate recordings:

1) In schools where there are no (or few) other Individualized courses, teachers generally must cope with the usual 25 or 30 new students on the first day of each term. They will need to obtain (by purchase or duplication) as many copies of the first lessons as they have students. But thereafter, as faster students move ahead quickly, the class spreads out and demand for duplicates declines rapidly. The illustration shows how one school might prepare for a course with average enrollment of 30 students per period per term. (solid lines)



2) Schools Individualizing <u>more than one</u> related subject in a Learning Center can permit students to take subjects during <u>any</u> class period. Students can also easily begin a new subject as soon as they complete one on which they are working, regardless of the point during a term that they do so. (See I.I. System/Learning Center Management) After all, if a Learning Center has materials and staff available, what difference does it make which subject a student studies, or when? Instead of 30 students studying one subject during a period, you might have 5 students, each studying 6 subjects during <u>every</u> period. Therefore you need only purchase or duplicate 6 or 7 copies of the first recordings (dotted line), which requires fewer copies of recordings for each subject than the first method. Cost per subject declines quickly with each course/Program added to an Individualized Learning Center.

3) Schools with high volumes of students in a Learning Center (whether large numbers in a few subjects, a few students each in many courses, or just many students) sometimes arrangeme to duplicate recordings for students only as they need them, in order to limit storage space and costs of maintaining large inventories of prerecorded cassettes. These are temporary, or transient copies, as opposed to permanent copies kept on hand for years. (See Appendix -- Memo of Agreement #2) New students are issued one or two blank cassettes (or provide their own); each time they need a specific lesson, Learning Center aides record it on one of these cassettes, after <u>erasing</u> the previous lesson.

High volume is a must for this last plan to be cost-effective; the necessary high-speed duplication equipment costs from $1000 to $3000. Another difficulty is that, in order to protect the interests of publishers, their copyright statements should appear on the exterior of cassettes on which their lessons are recorded. That copyright label must be permanent enough to last the life of the cassette, yet easily replaced by another when re-used.

This is also the most difficult plan for publishers to control, and is therefore not generally encouraged. The usual arrangements are: 1) The school pays a one-time or yearly fee for the right to duplicate without limit; or 2) pays a small royalty -- typically from $5 to $15 per hundred copies. This way, publishers receive some return -- however small -- for use of their materials, and they minimize risks because copies are usually erased and rerecorded as students progress. Both plans will vary among producers and according to the volume of copies made.

* * *

Because the Student Syllabus is also an integral part of an Individualized Program, effective management of a Learning Center requires that each student have a copy of the Syllabus, just as he should have easy access to recordings.

Most I.I. publishers use a single syllabus or workbook for a full course. A few others break workbooks down into pamphlets containing individual lessons or groups of related topical lessons in "modules." Fewer still may provide spirit masters with the initial Program set -- usually the only time schools can legally duplicate workbooks without special permission from (and, probably, paying a royalty to) the publisher. (This is most common among publishers of elementary-level materials.)

Again, however, like the duplication of recordings, unlimited duplication "priveleges" can be a two-edged sword: They are another constant burden in terms of time and expense -- a burden with which your staff members must deal. In most cases, however, the Student Syllabus is not, nor should be, broken up; the vast majority are copyrighted -- just as are recordings -- and can no more be duplicated than any traditional textbook.

Furthermore, the complete syllabus should be accessible to students, as is any text, so that they may preview or review at will. Previewing is, of course, necessarily limited, as most of the content of an I.I. syllabus will consist of written notes, which do not yet exist to be previewed.

Keep that in mind: Most Individualized Syllabi or workbooks are consumable materials -- students will take notes, work problems and exercises in them, etc. They need to be replaced for new students beginning the course.

Some educators ask whether students should keep their Syllabi after they complete the course; Some administrators or teachers feel that students who retain their Syllabi might somehow provide

information to future students. For the most part, however, nothing can be found in a Syllabus that would not be found in a textbook (and, often, if notetaking skills are poor, considerably less), so there is little need to require their return.

There are two parts to an ERA-designed Student Syllabus: The Notetaking Section and the Exercise Section. Students complete the Notetaking Section while listening to the recording . . . hopefully without interruption, in order to ensure the greatest possible continuity in development of concepts and ideas. The Exercise Section then summarizes, tests, and reinforces students' understanding of topics encountered through participation in listening/notetaking activity.

The following suggestions should help students, who listen to the correlated recordings under genuine I.I. conditions, to maximize their retention and comprehension:

1) They should preview a few minutes of a new Program, to judge the pace of the narrative and determine just how the author correlated it with the printed workbook.

2) Rewind the tape to the beginning of the lesson and start taking notes as they follow the narrative. The "lead lines" will help them determine progress of the narrative, organize notes, and highlight important facts and concepts. Remember, too, the leadlines are only <u>fragments</u> of key sentences, and <u>cannot</u> normally convey a complete idea. The syllabus <u>must</u> be used with a recording.

3) Students should try to summarize, rather than taking verbatim notes. They should try to identify key ideas <u>even if they must relisten to the lecture -- or a portion -- several times</u>; repeating questionable points will help them understand and retain more. If some students are unskilled in notetaking when they begin, verbatim notes are not unreasonable, if they help build confidence. With experience and success, students will discover exactly what they do (and don't) need to note.

Many students, too -- college-bound or not -- may find that a one-term course in personal-use shorthand will dramatically increase their ability to take accurate and complete notes. As we demand they take a more active part in the learning, they quickly see the value in such a skill; whether taking courses in Business, History, or Biology, basic shorthand can be a big asset. (Believe me, I know. The first draft of this GUIDE was written largely -- as ideas randomly came to me -- in cars and planes, on bar napkins and scraps of paper at hand. If not for my knowledge of PERSONAL SHORTHAND, some thoughts might never have found life on paper.)

<u>Encourage students to bring questions of any kind to your attention</u>, at any point during notetaking. This, and a relaxed, comfortable give-and-take relationship between pupil and teacher will prevent frustration over anything not easily understood.

4) They should proceed through the entire lesson this way --

listening carefully, repeating important sections, making concise notes. At this point, they should -- at least briefly -- review all their notes, and then complete the Exercises for that lecture. Some Programs may have students complete the full lecture before doing any Exercises; others may instruct students to stop and work Exercise problems at intervals throughout the lecture; still others may do both, and weave several problems or questions into the course of a lesson, saving the more formal Exercises for the end of the lesson. Many will use a variety of these, depending upon the subject and topic conerned.

5) Since no two students have the same background -- ability, aptitude, interest, motivation, experience -- do not feel that they all must listen to every word of every lecture. Under I.I. conditions, they can decide whether they are sufficiently familiar with the material to merely "spot check" a lecture. However, you would be prudent to reserve this right until you are aware of a student's ability and responsibility. And if students experience difficulty completing any Exercises, they should review their notes, or even the relevant portion of the lecture again.

This kind of flexible atmosphere, where students are able to make -- are encouraged to make -- their own decisions, helps them learn the consequences of their own actions and take responsibility for their own educational progress. They will make mistakes, but at least they may do so where such mistakes do not carry a heavy penalty. Beginning with small decisions of little individual consequence, they learn to recognize when mistakes carry greater or lesser consequences, and be better prepared to deal with real-life decisions when they leave the sheltered school environment.

6) If, after independent review, students cannot discover the answers to their questions or problems -- or the solutions to exercises, encourage them to seek the assistance of their instructor, Master Teacher, or Learning Center Supervisor.

7) Students should check their own Exercises. When they discover errors, they should work the problems over after discussing difficulties with teachers -- or even their peers.

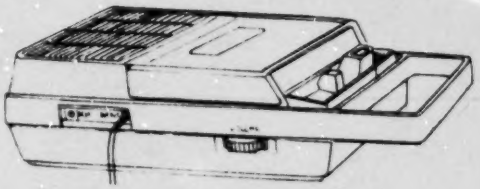
Copying answers to Exercises from a Key ahead of time -- although not desirable -- is not automatically wrong. If students wish to study while away from school -- even overnight or a weekend -- the opportunity to check answers to Exercises can be important. Most students will learn to be honest with themselves . . . in a system where emphasis is placed on understanding rather than mere attendance. In any event, mastery tests will help teachers find those who do not thoroughly understand the subject, and for whom additional review or remedial instruction should be prescribed.

Remember, it is the combination of stimuli received through listening, reading, writing, problem solving, and discussion (with teachers and peers) that results in maximum benefit from learning. None of these is done well by students in contemporary schools.

Only two types of supporting equipment are absolutely necessary to an Individualized Program in your Learning Center: Cassette players and/or recorders, and headphones.

There are many different configurations for audio recording tapes, ranging from reel-to-reel to mini- and micro-cassettes. By far the most common is the Philips-type standard compact cassette. It is smaller, and offers more security than reel-to-reel, because the tape is enclosed in a case and students need not constantly handle the recording tape itself. Standard Philips cassettes are probably the best configuration in the compromise between size and capacity: They contain tape enough for more listening time than smaller configurations, yet are still small enough to make storage convenient. They are also used in a wider range of machines than any other configuration, making acquisition, maintenance, and replacement least difficult with the Philips-type cassette.

For a vast majority, if not all facilities, the most appropriate cassette machine is a simple cassette <u>player</u> -- a machine which cannot record at all (and thereby destroy valuable recordings). However, recorder/players today are only slightly more expensive than the less sophisticated machines, and might be more easily obtained in some areas. Some institutions might purchase these, and have AV technicians disable their recording capability.



Individualized foreign language facilities may want cassette machines which <u>do</u> record -- or some which do and others which don't -- in order to provide for feedback of student verbal responses. In addition to <u>teacher</u> feedback, students later hear exactly what they said, and compare it with the instructional recording. It is certainly still possible for facilities to be wired so that teachers can listen in on what students are studying, and/or speak to them from a remote location. The latter isn't really necessary -- or even desirable -- since the personal touch of the teacher's physical presence can often make a great deal of difference.

Like any other Individualized subjects, it makes no difference if students are on different lessons. Teachers can monitor student progress regardless of which lesson, level of kownledge, or even language each is studying.

Plan how you will <u>power</u> cassette players. Do you purchase machines with internal AC/DC adaptors, adaptors on the power cord, or do you plan to use machines with batteries? Rechargeable batteries and their companion recharging systems are more expensive, but my be reused many times. It may be prudent to use

only one or the other kind of battery (or mark them all very clearly) -- since unknowledgeable aides or teachers might otherwise throw away valuable rechargeable batteries.

If you plan the latter, should you use normal or rechargable batteries? If cassette players are to be firmly attached or built into desks, it might be difficult to change batteries; and if players must be stored somewhere other than on desks, how do you store or check out power cords? And how will you get power to desks? It is inconvenient (and perhaps even dangerous) to have extension cords trailing across floors. Talk over the alternatives with maintenance personnel and administrators; the best solution for new facilities is to use batteries, at least until you prove your Learning Center's worth and can justify some remodeling expenses.

Talk with Audio-Visual (AV) personnel about cleaning and maintenance of cassette players. This is very important -- accumulated dust and tape particles in machines can affect the quality of reproduction to the point that students can't understand lectures. Not only that, machines degrade tapes each time they are played, shortening their effective life. The dirtier the cassette machine, the shorter the life of your cassettes -- and the machines themselves. Too many replacements will increase costs unnecessarily.

To be used effectively in a Learning Center, cassette players and headphones must first be compatible in two ways: 1) machine jacks and headphone plugs must be of equal size, and 2) machine and headphone should be matched for the same impedance. If you are not familiar with these terms, consult your AV technician or local AV dealer.

A simple, non-technical way to determine whether the headphone matches the impedance of a particular player, however, is to plug it in, and check for a perceptible "buzzing" which may partially or completely drown out the recorded sound. Or, if the recorded sound remains very faint, and does not respond to normal volume increase for listening clarity and comfort, the impedance probably is not correct. In either case, the two do not match, and should not be used together. When the impedance does match, the recorded sound will be clear, and will respond to both volume increase and decrease, without buzzing or background interference.

The larger, 1/4 inch plugs are the more durable and least prone to damage under heavy use, although the 1/8 inch mini-plug is more commonly used among home or personal-use cassette equipment.

If your school purchases, or has purchased, several different types of machines and headsets -- not all of which match each other in impedance, jack and plug size, or both -- you should make every effort to ensure that like equipment is used in a single

Learning Center, and different equipment used in another. If this is not possible, whether because yours is the only Learning Center in the school, or because there are simply too many kinds of equipment to isolate them, it will be necessary to label the equipment in order to identify units adequately for the instructor, aide, and other Learning Center staff or students dealing with them daily, those that may be used together.

If your school already has a Resource Center or Library Audio Center, determine its present status and uses, and whether your Learning Center can use its physical facilities and/or equipment. Many "language labs" are unused for part of each school day and might be easily adapted for I.I. use during those periods. By using such facilities for 3 or 4 periods each day you could begin operation of your Learning Center without any significant financial commitment for equipment and hardware. By the time you prove the worth of your facility, and are able to expand the number of courses you offer -- possibly drawing enough students to justify operation throughout the day -- you will have solid arguments for establishing the kind of facility you wish.

When purchasing equipment -- such as players, recorder/players, headphones, etc. -- keep in mind that costs need not be great; a few players and headphones can accommodate a considerable number of students, because they are used throughout the school day.

For instance, 10 players with 10 headsets -- 10 complete "stations" -- can provide 60 student-hours or more of instruction over each six-class-hour high school day. The initial cost of such equipment should not be much more than $700: $45 to $50 for the players, and $10 to $15 for the headsets. Optional "frills" can add to these figures. But these same machines can provide as much as 150 student-hours during a 15 hour community college or university day.

Of course, 10 stations cannot serve enough students to justify the full-time attention of an instructor. Thirty players could, however, and would serve as many as 180 student-hours per day in a high school and 450 in a college, at a cost of only $2100 . . . a negligible cost, considering the time-saving advantages to teachers and administrative schedules, and the I.I. learning advantages to students. When you consider further -- with regular routine maintenance -- that the life expectancy of this hardware is 8 to 12 years, the amortized cost is negligible.

Determine the number of players and headphones your Learning Center needs, according to the maximum number of students using the equipment at any time, of any day. For instance, if the largest number of students using the equipment at any one time is 40, then you must obtain 40 complete stations (players with headsets). Keep in mind that these can serve 240 to 600 student-hours each day, at a cost of less than $3000.

If, on the other hand, you do not have this much demand at first, you might reschedule the same students into two different periods,

and you need only 20 players with headphones. This adjustment, of course, will depend on the times you are able to offer services to students during the day.

The fewer students served, however, the higher the cost per student; be careful not to let the number of students fall below that needed to justify the time of an instructor. And each time you limit the hours that you offer your Learning Center services, you will also be sacrificing one of the advantages of I.I. -- its scheduling flexibility. The more subjects your Learning Center can offer for more hours . . . the more students you can draw into your facility; but never schedule more students at one time than you have units of equipment available. (More correctly, because there is no effective limit to the number of students a well managed Learning Center can serve, make sure you always have as many stations of equipment available as there are students.)

Splitting groups and rescheduling can be a temporary -- if undesirable -- answer to cost problems for a small or new facility, until increased enrollment and additional courses make your Learning Center more in demand . . . and more cost-effective with each one.

Cassettes maintained in permanent stock in a Learning Center should be labelled on one or both faces, if not provided that way by the manufacturer or school AV Department. Further, they -- or their storage cases -- should be labelled on one or two edges, depending upon what kind of storage system you use.

There are an increasingly wide variety of manufacturers of file cabinets specially prepared for orderly cassette storage. Some are designed to hold only the cassettes themselves; others allow -- or even require -- that you use individual cassette cases. These are most often found in two forms: Soft, translucent polyethylene plastic, and a harder, more brittle clear plastic -- often simply called "soft packs" and "hard packs" respectively. The "hard packs" are a more uniform shape, which is more easily stored.

If you do not expect to use a great number of cassettes when you begin your Learning Center, it may [illegible] be more economical to use standard card file drawers. The 3" X 5" size will hold 35 to 40 cassettes, while the 5" X 6" size will hold 60 to 65 (both without cassettes boxes). Commercial cassette storage cabinets are capable of storing hundreds of cassettes, with or without plastic cases.

No special furniture is really necessary for I.I., as long as the basic equipment and supplies are available. Some of the most successful Individualized facilities in the country use no special furniture whatsoever.

If study carrels are available, they can further insulate the students -- visually, as well as aurally -- from distracting influences, but they are not essential to an effective

Individualized facility. Tables and chairs should be as durable and comfortable as possible; many students may be -- for the first time -- spending long periods of time studying in one location.

There are a variety of tabletop dividers or "porta-carrels" which could be used to partition individual study areas for students without the greater investment of free-standing carrels. Another alternative is to use room dividers, such as free-standing blackboards, bookshelves, hanging plants or tapestries, etc. to isolate parts of large Learning Center rooms. You might use both alternatives together, but be careful not to make it too difficult for teachers to observe all, or as many as possible, of the students at the same time.

Some commercially produced study carrels are available with built-in cassette players. Or, if your school or district has the resources, you may contrive to "motivate" an open-minded industial/vocational instructor to modify your carrels to add such "built-ins" for you, or assign his/her students to do so. We recommend such a solution to keep Learning Center set-up costs down and increase security by limiting the volume of equipment that students and staff handle daily.

If that plan does not seem too difficult to your vocational instructor, you might suggest that savings would be greater if his/her students construct the whole carrel. Vocational students would experience building something practical they may use themselves, and both departments share expense. You could acquire study carrels specially tailored to the resources of your school and the needs of your facility -- from as simple and inexpensive, to as complete as you could wish.

Set aside several desks or tables for testing. Our experience suggests that Individualized Mastery Learning environments should encounter less cheating, but it is wise not to tempt students too far. Because we place greater responsibility on individual students, we rely more on frequent Mastery tests to tell us who isn't learning. You can easily observe a small separate area to keep students honest and to identify those who have trouble completing tests.

If you serve enough students, it may be economical to look into acquiring an automatic test scoring device to minimize students' waiting time, and so you can discuss problems with them promptly. There are two major types of these devices, those which stand alone and mark and score test forms, or those which serve as data entry terminals for micro, mini, or mainframe computers.

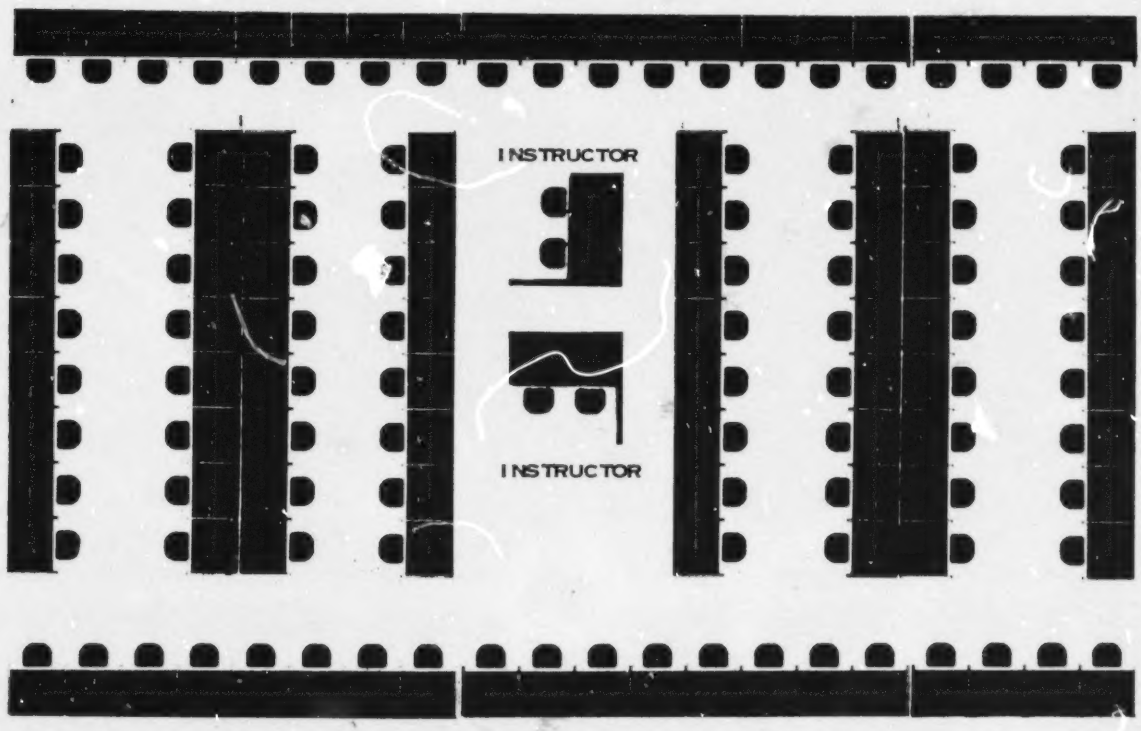
In the former case, some companies do not even require that you purchase or even lease the machine, if you use a sufficient quantity of test forms during a year. Several companies already have test forms set up for some ERA-designed materials, which might eliminate first-time setup costs for you.

To discourage vandalism, all equipment, especially portable equipment, should be marked or labelled (permanently, if possible) for easy identification. Electric embossing pencils or Dymo labellers are excellent for this. Wherever feasible, otherwise portable items should be firmly attached to furniture in order to make vandalism as difficult as possible. Or, you may wish to explore several methods of storing portable items. If possible, a secure room separate from, but adjoining the Learning Center, might be used.

Some schools have combined two or three classrooms by removing walls or cutting doors or archways between them, in order to permit their facility to serve a greater number of students. They may then partition a small portion of this new space to create their "secure room." You might also use some of this space for staff members' offices, whose presence can serve to discourage "unauthorized entry." Even such rudimentary security measures are especially important in facilities which use small <u>portable</u> microcumputers.

Where this is not feasible, you may look into construction of permanent storage cabinets or counters which can be securely locked during hours when the Center is unstaffed or closed.

A third alternative -- a combination of these first two -- may also suffice. By placing storage compartments for cassette players, headsets, and cassettes on wheeled bases, all necessary equipment may be available during class hours, yet easily moved to a remote location (such as an AV equipment room) at other times. Thus, a fledgling Learning Center may maintain security without committing funds for remodeling . . . which supervisors, administrators, and school boards may be reluctant to encumber before the Center has demonstrated its worth.



Examples

First, and foremost, you are cautioned to start small, unless the overwhelming majority of your staff members are fundamentally committed to the concepts of Individualized Instruction. Only the schools whose staffs are of a single mind with respect to I.I., and have the greatest financial resources, would be able to implement an I.I. facility efficaciously on a large scale. It has been done, but such examples should be assumed the exception, rather than the rule. You should expect to start small and prove the value of I.I. every step of the way.

The costs associated with establishing an Individualizd Learning Center are, like any purchase of equipment intended for use over many years, impressive. The key, however, is "many years." Nearly every purchase of units for a Learning Center can be amortized over <u>at least</u> five years.

Amortization aside, however, the cost of a genuine Individualized facility is much less than that of many extravagent imitations. For example, you can generally assume that the cost of providing the necessities for an Individualized Learning Center serving 30 students per period, 6 periods per day might cost between $5000 and $8000. By comparison, to Individualize with most commercial alternatives -- using extensive visual aids -- for that number of students might cost <u>$30,000</u> to <u>$120,000</u>.

Compare costs for Individualized facilities handling 50 to 70 students simultaneously, and the differential will be even more startling. Or plan a Learning Center which can serve students in 2 or more subjects simultaneously, and the comparison ceases to have meaning.

This is because you can then offer subjects for which you don't have enough students to justify a traditonal class, and might otherwise have to drop from your curriculum. And, by serving more students in more subjects, you can keep the number of students you serve each period as high as possible, and better justify the time of supervising teachers, as well as the Center itself. Higher volumes of students also translate into lower per-student costs, and faster amortization of startup costs.

Example #1 -- 20 students, 3 periods per day, 1 subject

> You need at least 20 cassette players and headphones (@ $65 per station, approximately $1300). An Individualized Program suitable for a full year of study would consist of 25 to 30 cassette recordings of 50 to 60 half-hour lessons (approximately $450). Duplicate cassette recordings (450) at a cost of $3100. 60 student workbooks or syllabi (@ $15) for a cost of $900. Total initial cost of your facility -- $5750. Amortized over five years (less books), $970. Even adding the $900 per year you would need to purchase new workbooks, your per student cost is just $31.17.

Example #2 -- 20 students, 6 periods per day, 1 subject

The only change from the previous example is that your cost for workbooks would rise to $1800. (Total initial cost -- $6650) All other costs would remain the same, however, and because you serve twice as many students, the per student per year cost is just $23.08.

Example #3 -- 20 students, 3 periods per day, 3 subjects

Quite similar to #1 again, except you need to purchase two more Programs ($900), offset by the fact that only 320 duplicate cassettes are needed ($2400). Total initial cost -- $5950. Amortized yearly cost less books -- $1010; per-student/per-year cost -- $31.83.

Example #4 -- 20 students, 6 periods per day, 3 subjects

Again, quite like #3, but book costs are up to $1800 once more, although larger volume of students brings per student per year cost back down to just $23.42.

Until now, however, we have been dealing with merely marginal facilities serving approximately the minimum number of students that most schools can reasonably schedule for teachers and still justify their time. The next examples are more realistic and -- because more students are served each period, the cost projections are more optimistic. Although these figures do not try to include salaries, you should consider them when presenting proposals.

Example #5 -- 30 students, 3 periods per day, 3 subjects

Now there are significant changes: 30 stations of cassette equipment cost $1950; programs still cost $1350; duplicates increase from $2400 to perhaps $3000. Total initial investment is approximately $6300. Per year cost is $1260. With book costs at $1350/yr., per-student/per-year cost is just $29/yr.

Example #6 -- 30 students, 6 periods per day, 3 subjects

Again, increasing the times and numbers of students served decreases the per-student/per-year cost to $22/yr.

Some of the most successful Individualized Learning Centers have, at times, been even more aggressive in their adoption of Individualized methods. For example, some have served as many as 50 or 60 students at once.

Example #7 -- 60 students, 6 periods per day, 3 subjects

Equipment, $3900; programs, $1350; duplicates, $4500. Total cost -- $9750; per year cost -- $1950. Per student per year -- $20.42.

To be still more effective, most Individualized facilities ultimately do not limit themselves in the number of subjects they offer.

Example #8 -- 60 Students, 6 periods per day, 8 subjects

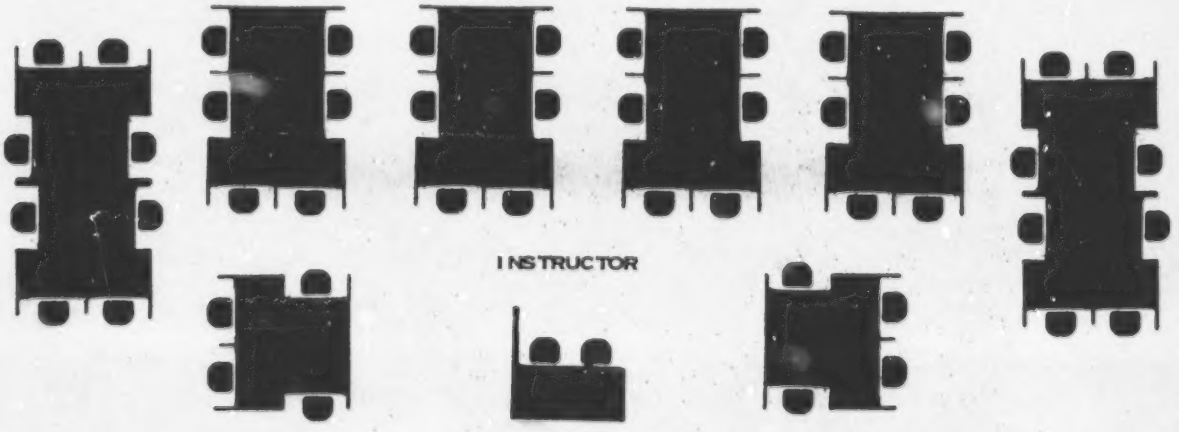
> Differences from #7 are that Programs would cost $3600, and duplicates $6300. Total cost -- $13,800. Per year costs are $2760; per year book costs are, like #7, $5400. Per-student/per-year costs are $22.67.

Still, none of these comparisons take into account the valuable time of teachers. The average American teacher represents an expense of approximately $25,000 per year to the school. (This is not take home salary, but that plus fringe benefits, taxes, and all other expenses. Therefore, a teacher in conventional classes, who serves six classes per day of 25 students each will result in a per-student/per-year cost of $166.67.

An Individualized Learning Center, on the other hand, may serve 50 students, for a per student cost of $83.33. Even when you include instructional materials costs, the per-student/per-year costs range from $115.16 to $103.75. If we add the expense of a paraprofessional aide, at $10,000 per year, the per student costs of a Learning Center are $148.49 to $137.08 -- at least 10% lower cost.

As I.I. becomes more widespread, and Learning Centers offer more subjects, serve more students, become more open-entry/open-exit concious, and determine student advancement solely by demonstrated proficiency . . . students will be much more evenly distributed throughout your curriculum. Ultimately you will rarely need more than 3 or 4 copies of recordings.

As always, however, there are exceptions: Subjects which are required for all students enrolled in the school, of course, may necessitate many more duplicates than any of the examples given. But inclusion of such a number of students in your Learning Center assures you that there should never be any question of not having enough "customers" to justify a teacher's time.



Facility Management

You can locate your Individualized Learning Center almost anywhere. One place already mentioned is in former "language labs," or, at least, those being used less than full time. Another often-used location is simply a portion of a Library. This is quite convenient because instructors and students may draw upon the Library's resources for reference support; but because there is no live lecturing, other users of the Library are not disturbed.

The most common location for an Individualized Learning Center, however, is . . . a classroom -- any classroom. Like "language labs," an ILC -- because of its cassette players, headphones, and dozens, hundreds, or even thousands of instructional recordings -- is difficult to move from one room to another and must generally be permanently located in a room of its own. But as most schools experience declining enrollments, there is no shortage of empty classrooms. As an ILC begins to operate successfully, however, there is greater and greater demand for space for the facility, and it may become practical to expand to include two or three classrooms. (SEE Hardware/Furniture)

As noted in an earlier section, almost any instructional materials can be "Individualized," if the will exists. This holds true for the physical environment too; you can establish a successful Learning Center almost anywhere; but, as always, success is primarily a function of the ability and dedication of the people concerned. However, your ILC will be most successful in a location specifically designed for it.

Whatever the physical nature of your facility, you can make your Learning Center successful. Some of the most successful Individualized facilities in the country, in fact, simply use cassette players and ordinary school desks. And, under the supervision of an able instructor, unbroken concentration (on task) by students can obviate the need for expensive hardware. If you can justify the expense of carrels -- whether portable or full-size, commercial or school-made -- they are always desirable, but by no means necessary.

Individualized Instruction methods, too, are most effective when fully Individualized materials are also used. But while beginning an Individualized Learning Center does require a greater initial financial investment than traditional methods, I.I.'s savings on regular operating costs quickly offset this. And this, then, frees future funds to be directed toward other purposes . . . such as carrels, more individualized programs to expand your Center, or an aide, so you can serve even more students.

Supply cassette players to students by checking them out daily, or securely fastening them to desks, tables, or carrels. Students should also check out headphones daily; their size makes them easily carried away otherwise.

Too, it may be desirable to obtain two or three different kinds of headphones (as long as they all are compatible with the players you have -- SEE Hardware), in order to be prepared for those students who may find some kinds awkward or uncomfortable. Or, it may be easier to suggest that students with special or unusual requirements purchase their own headphones. Most, however, will accept those available, and get over petty discomforts with use -- the "newness" and strangeness eventually wear off.

Machines should be cleaned and demagnetized at least monthly (especially in facilities which serve a large number of students). Be sure to provide access for AV personnel for maintenance. Approximately yearly, depending upon type, machines should be thoroughly checked, cleaned, and drive belts replaced. Set up a regular maintenance schedule so that machines are kept in good condition (or Murphy's Law will catch up with you, and cassette players will break down at the most inconvenient possible moment).

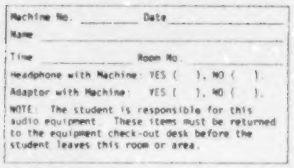
In many facilities, an AV or Learning Center aide may perform routine portions of this task, or if yours is a small facility, you may do so yourself. It isn't particularly difficult: A cotton swab and denatured alcohol are all you need to clean tape head(s), pinch roller and capstan. Be sure to use only a clean swab on the tape head. Do not depend upon a tape head cleaning cassette; they aren't capable of coping with the buildup that can result from heavy use. Demagnetizers can be easily acquired from any consumer electronics store.

Headset condition, like cassette players, also should be checked regularly for dependability and quality of reproduction, and then cleaned and sanitized . . . especially if many different students are using them constantly.

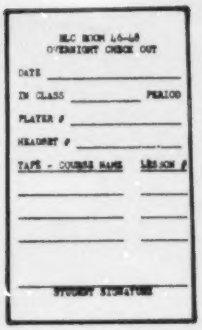
If you choose to use external power cords or AC/DC adaptors for cassette machines, they too, should be checked out daily. Or they might be secured to desks whenever possible . . . even if players are not. In large facilities, where the process of checking out machines, headphones, and adaptors, as well as instructional recordings, could otherwise become impracticably complex for students and staff, it may be desirable to attach adaptors to the players themselves.

Should you choose to attach adaptors to desks, matters would be least complex if they, and carrel lights (if any) are wired into independent, isolated power supply circuits. The circuit(s) can then be turned off at day's end without disrupting others. This saves power and extends the life of equipment, even when students might leave them on.

Control over equipment and recordings through some kind of record keeping system, is essential. You might use various "check-out" and "check-in" methods. A simple form can document use of players, headphones, and even


Machine No. _____ Date _____
Name _____
Time _____ Room No. _____
Headphone with Machine: YES ( ), NO ( ).
Adaptor with Machine: YES ( ), NO ( ).
NOTE: The student is responsible for this audio equipment. These items must be returned to the equipment check-out desk before the student leaves this room or area.

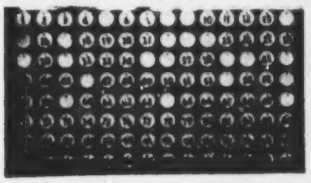
adaptors, cassettes, attendance data, or other needs of an individual school. For example, some large facilities may wish to add a space for the Social Security number, to aid in identification of students whom aides may not know by sight.



Clearly, the more items which must be checked out, the greater a system's complexity. Even a simple system may at first intimidate some students, but careful explanation and assistance from aides and instructors will help them master the system within just a few days.

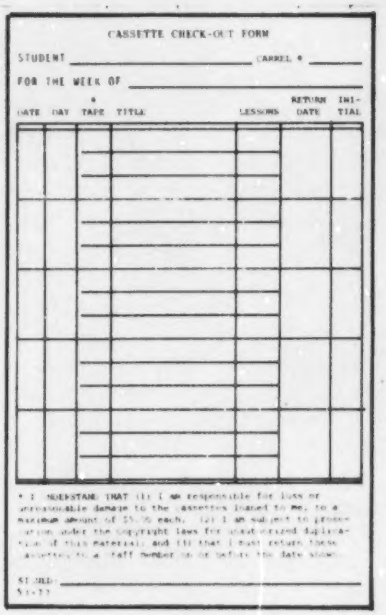
Although not necessarily important in small facilities where all students are known to staff, instructional materials and equipment in larger ones should be managed and dispensed by a student or paraprofessional aide. Otherwise teachers might merely trade one routine task (lecturing) for another, once again limiting the time they can devote to their students.

In small Learning Centers, or those in which students may spend all or most of their day, a small tag, with their name and/or desk number on it, may suffice to indicate when an individual has an item out. For example, three tags might be used to represent a machine, headset and one cassette checked out by a student.



If students are in a <u>fully</u> Individualized facility for all or most of the day, they may be assigned their own carrels -- in which they always study, and may keep books and other personal items. Forms or tags might be numbered to correspond with carrels.

In many colleges or very large high schools, school ID cards may be used in credit card-type impression machines, to record information about students quickly. Many university libraries now even use computerized book check-out systems. Learning Centers in or near either type might simply add their equipment and cassettes to the materials the computer keeps track of.



You should permit students to check out copies of recordings to take home overnight, over weekends, or during planned absences (as long as this doesn't cause service to students who remain to suffer). Certainly you should not discourage students from this unless your cassette inventory is severely limited. Every willing effort to increase study time deserves our wholehearted support. You might also make recordings available

to school district tutors or Special Education departments, for students unable to attend regularly.

Extensively Individualized visual aids, including too many microcomputers, aside from increasing "startup" costs of from 3 to 10 times that of simple equipment, can multiply the complexity of an I.I. system beyond reasonable limits. Adding filmstrips and projectors; slides and projectors; and/or videotape players and TV sets is not only expensive at the outset, but -- because such equipment and materials are much bulkier than simple audio equipment and materials -- make storage and handling exceedingly difficult and expensive.

STUDENT PROGRESS RECORD

NAME _____ PERIOD _____

COURSE ACCOUNTING 1-2 YEAR _____

QUARTER GRADES: 1st _____ 3rd _____

2nd _____ 4th _____

COURSE PROGRESS:

Lesson 1 _____
Lesson 2 _____
Lesson 3 _____
Test #1 _____
Lesson 4 _____
Lesson 5 _____
Lesson 6 _____
Test #2 _____
Lesson 7 _____
Lesson 8 _____
Lesson 9 _____
Lesson 10 _____
Test #3 _____
Lesson 11 _____
Lesson 12 _____
Lesson 13 _____
Test #4 _____

(% Credit Earned) 9-WEEK GOAL
* * * * * * * * * * * * * * * * * * *

Lesson 14 _____
Lesson 15 _____
Test #5 _____
Lesson 16 _____
Lesson 17 _____
Lesson 18 _____
Test #6 _____
Lesson 19 _____
Lesson 20 _____
Lesson 21 _____
Lesson 22 _____
Test #7 _____
Lesson 23 _____
Lesson 24 _____
Test #8 _____

PRACTICE SET _____

(% Credit Earned) SEMESTER GOAL
* * * * * * * * * * * * * * * * * * *

Syllabus Turned In _____
(First Semester)

Syllabus Turned In _____
(Second Semester)

Lesson 25 _____
Lesson 26 _____
Lesson 27 _____
Test #9 _____
Lesson 28 _____
Lesson 29 _____
Test #10 _____
Lesson 30 _____
Lesson 31 _____
Test #11 _____
Lesson 32 _____
Lesson 33 _____
Test #12 _____
Lesson 34 _____
Lesson 35 _____
Test # _____
Lesson 36 _____
Lesson 37 _____
Lesson 38 _____
Test #14 _____
Lesson 39 _____
Lesson 40 _____
Test #15 _____

(% Credit Earned) 9-WEEK GOAL
* * * * * * * * * * * * * * * * * * *

Lesson 41 _____
Lesson 42 _____
Lesson 43 _____
Test #16 _____
Lesson 44 _____
Lesson 45 _____
Test #17 _____
Lesson 46 _____
Lesson 47 _____
Test #18 _____
Lesson 48 _____
Lesson 49 _____
Test #19 _____
Lesson 50 _____
Lesson 51 _____
Test #20 _____
Lesson 52 _____
Lesson 53 _____
Lesson 54 _____
Test #21 _____

PRACTICE SET _____

(% Credit Earned) YEAR GOAL
* * * * * * * * * * * * * * * * * * *

The moderate gains in instructional effectiveness sometimes demonstrated by such media do not compensate for the costs and losses associated with Individualizing them. Yet, to use them without Individualizing fails to register achievement increases equal to those of ERA-style recordings used under proper Individualized conditions. We are not opposed to the use of visual aids per se; there is undoubtedly a place for them in any Individualized Learning Center. But you should carefully consider the extent of their use to keep costs manageable.

Even in those facilities which require the use of visual aids, they often are not necessary for every student all of the time. It may be quite satisfactory for most facilities to use ERA-style audio cassette I.I. materials for the bulk of the instruction, with 1 or 2 or 3 slide/filmstrip/videotape players and/or computers (or some combination of all of these) which individual students may use as they reach a point at which they are productive. But it is not necessary for them to be available to every student constantly.

Set up a thorough filing system containing all pertinent information about the students in your Learning Center. Because students may enter or leave your facility several times during their school careers -- complete one subject and begin another at any time, next week or next year -- you can't rely upon often fragmentary records in a distant office.

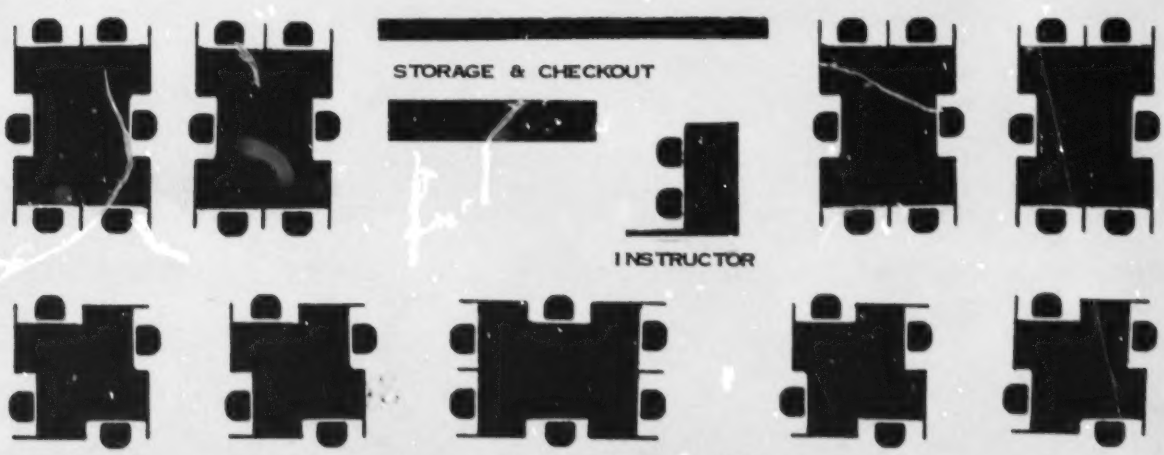
A frequent criticism of Individualized methods it that there is little "structure" to verify students' progress. This is only true if you refuse to do so, however. Most successful ILC's devise some method of doing so, although the most simple are usually the best. Some schools may have aides keep track of which lessons students check out daily, and of test progress. Most integrate the two (see illustration on previous page), and instructors or supervisors perform this task themselves daily, so they can keep aware of students' progress, and maintain a closer relationship with each.

In order for Learning Center instructors to be available to students at all times, they should have a desk or carrel of their own for workspace within the ILC itself. This way, teachers can grade papers and tests, prepare supplementary lesson narratives, or any other work they wish, once they have completed their progress check of students during a period, as long as their first priority remains to assist and observe students.

The advantages of Learning Centers' flexibility also extends to being able to give out tests at any time of any day. You can then grade and return them immediately, giving students feedback about how well they understand a subject while everything is still fresh in their minds and advice is more meaningful. There may be days when your time is completely taken up this way; then there will be others that you can devote nearly entirely to "working independently" yourself.

Successful Learning Centers may also make use of this daily record keeping and assessment to inform parents of students' progress frequently, not just when grades are issued -- whether the news is good or bad. Because of the frequent nature of testing in Mastery-based Individualized facilities, teachers always have a very accurate idea of how each student is faring -- a much better idea than traditional teachers ever could hope to have where tests only occur a few times each term.

Learning Center supervisors should make a practice of keeping parents up to date about all that their children accomplish. Consider how much better parents can support your efforts -- through encouragement or a firm hand -- if they possess all the facts regularly. If parents feel more confident of your skill through this expression of interest and concern, they can provide you with a basis for solid community support.



I.I. System/Learning Center Management

In the past, innovations and "accountability" movements in education have foundered for the simple reason that classroom teachers have too much to do preparing and presenting lectures every day . . . to take on the added burdens which are inevitably associated with new experimental projects. Individualized Instruction remedies this.

Genuine Individualized Instruction, however, does not come about through merely transferring responsibility for learning from teacher to student. Indeed, teachers will be expected to accept even greater responsibility for students' progress . . . because Individualized facilities provide an environment within which instructors have the time and resources to practice their craft -- to work privately with students, get to know how they learn best -- and take any action necessary to ensure the success of each and every student.

We can and should be held more directly responsible for the progress of each student: I.I. also gives us the means for doing so. At the very least, if we only identify students with genuine problems, it is more than is often possible now. This does not mean that such students will fall into the already overused classification of "Learning Disabled," only that we recognize more can be done to help them cope with the school environment. We can then provide those students with specialized assistance when it will do the most good -- rather than discovering it in a Competency test just before graduation.

* * *

Resist the (all too "practical") temptation to use the recordings or syllabus independently. You could do so (I often listen to portions of Programs while driving), but they must be used together in order to achieve best results for the average student. By using only one portion of a Program, although teachers may appear to gain some of the free time I.I. promises, they lose the complementary, synergistic value of the components. They merely exchange their responsibility for lecture preparation and presentation for that of an I.I. Program's author, without considering how the complete Program improves student comprehension and eliminates many questions teachers must otherwise answer.

Why not, then, use recordings and syllabus together, but purchase only one set of recordings to play before an entire class or small group, thus saving the cost of fully Individualizing the subject? Because it represents a regression to the Monitor Instruction concepts that ERA discarded fifteen years ago. The reasons we did so are no less valid today: With Monitor Instruction, students must progress simultaneously, thus diminishing the infinite flexibility I.I., compromising its proven effectiveness, and making the hope of greater effectiveness and economy a false one.

Limiting independent use of an instructional medium leaves recordings to be used little differently than live lectures: Students cannot take notes as fast as the lecture progresses; cannot review portions of the lecture they fail to understand; nor even ask questions of the recording (which they may at least nominally do in live lectures). Teachers answer questions as long as a recording is playing for a class or group without causing them to fall behind the lecture (necessitating, finally, individual use of recordings in order to catch up). Or, if teachers stop the recording, the whole group must wait, probably for a single individual. Moreover, there is no privacy to your discussions with individuals, and each constitutes a distraction for all other students.

Furthermore, grouping of any kind is undesirable. It is not wrong in the short term, but quite thoroughly self-defeating if extended over more than a few hours or days. By forming a group you require students to meet and progress at an arbitrary rate that you determine, which cannot be right for everyone.

There are some subjects during which it is desirable -- or even necessary -- to have group discussions, seminars, or presentations. Arrange them informally, or as a regular part of a course curriculum -- as long as they really are temporary. Students who have similar backgrounds and specific problems or needs might be grouped for brief discussions or seminars, but they should be discontinued as soon as such justifications cease to exist. Students benefit because they are all prepared to discuss a topic at that point in time, but they may never find themselves together again.

If you must schedule such discussions often -- if many students seem to consistently require assistance at specific points within a course -- there may be deficiencies in the instructional materials. You may find it convenient and helpful to record your discussions for future students.

All of us -- formal students or not -- are predisposed to misunderstand things at times; no textbook or Individualized Program is capable of being all things to all users. We educators constantly add, delete, and change the sequence in which we present the course content in order to make the course "just so." So too, I.I. teachers have the freedom to adapt or "fine tune" instructional materials to meet their own needs.

This may be as simple as suggesting that students read a few pages or chapters in a textbook, or you may devote the opportunity toward preparing supplementary instructional lectures to suit your needs; record them; make copies; and insert them within the sequence of your Individualized Program. Then you may use them or not, according to your appraisal of each student's understanding of the subject; some or all may be prescribed for an individual, without in any way affecting the sequence of study or the progress of other students.

We all make judgments about the attitudes, abilities, and needs of individual students. Consequently, to best serve our pupils, we must be certain that our knowledge of instructional psychology and counselling skills is superior; now that we are in a position to do so, we must be prepared to advise students about how to overcome difficulties in attitude, concentration, study habits, discipline, etc. Schools thus need only leave genuinely serious cases for professional psychological staff. It also means that, with more people regularly making and changing judgments about every student, no one judgment -- or group of them -- can long label a student incorrectly.

It is not reasonable to expect all staff members to acquire advanced skills; it may be desirable to designate one who <u>has</u> as a supervising Master Teacher, directing other teachers and aides in a Learning Center -- with pay commensurate with the added responsibility.

In these days of increasing concern with levels of professional competence, we must be prepared for more rigorous teacher evaluation. This can consist of entrance and exit exams by schools of education, pre-employment testing by schools, and more frequent and extensive administrative in-service observation, evaluation, and retraining. Undoubtedly the most desirable is a self-evaluation and training program, conducted by and through professional organizations, whereby we educators set and uphold our own <u>stringent</u> standards.

To ensure that teachers have the time to do all we expect, Learning Centers serving more than 30 to 40 students per period should find aides, if possible, to grade simple objective tests, as well as manage daily handling and routine maintenance of equipment. They can be necessary in very large Learning Centers, but not essential in small facilities. In either case, they might be full or part time paraprofessionals, or simply volunteer parents or students.

A high volume of tests is necessary under Mastery Learning conditions, especially Individualized ones; aides can take the burden of routine attendance and testing paperwork, so teachers may supervise the greatest number of students possible without interruption. Some Learning Centers even serve enough students to justify installation of an electronic scoring device to improve test "turnaround times."

I.I.'s greatest benefit for <u>administrators</u> is that schedules for I.I. students may be arranged in any way suitable to the school, student, and instructor. Students may be scheduled into I.I. courses during <u>any</u> time that students have free from other traditional classes. Such schedules must, of course, take into account the availability of equipment and program materials at specified times during the day or week; but, ideally, Individualized Learning Centers <u>should be open every period of the school day,</u> to be accessible to students at all times.

Some high schools even make their Learning Centers available to students enrolled in evening or weekend Adult Education programs through local community colleges or universities. Many can also make use of I.I. to expand offerings of Continuing Education and correspondence courses.

Of course, many upper class or graduate college students are for the most part already in relatively "individualized" courses of study. By then reasonably competent in a field, such students already do their work quite independently and consult with instructors privately, as needed.

The same is not true now for most younger students, however -- secondary or post-secondary. Teachers must see, then, that once in an Individualized Learning Center, students control their own study time. They are free to start, stop, pause, back up, skip forward, review, or start over from the beginning -- on their own initiative, just as they might in reading any textbook -- whatever they feel is necessary to further their information gathering or understanding.

Individualized Instruction's greatest strength lies in this flexibility. That doesn't imply chaos, anarchy, or loss of control in the classroom; they are not necessarily mutually exclusive -- you can have both the adaptability to alter the instructional sequence for individual students and still monitor their progress and behavior closely enough to take appropriate action.

When questions do arise, students should consult outside references, instructors, or even their peers and parents. Often, the process of articulating a question to another person will force students to examine the problem from a different perspective than previously . . . with the result that they may sometimes not even complete a question, because they answer it themselves.

On the other hand, there is no such thing as a stupid question, as long as it serves to further a student's understanding of a subject. Similarly, no question is a "waste" of the teacher's time, because they all assist students in learning a subject, if only by showing them that they "knew it all along."

Yet, one of the most important skills a student can learn is how and where to look for information. It is something schools would do well to prepare students to face. The world's demands for information are growing geometrically -- we cannot afford not to prepare them for those future situations for which they do not have ready answers. We cannot shelter or protect our young from the uncertainties of the world; the least we can do is give them the intelluctual tools to solve the problems they encounter. And, in an Individualized environment, where students are not spoon-fed a subject, they often must actively seek out references in order to answer their questions. Failing that, they can always turn to

the instructor(s), who have the time to listen to questions they cannot entertain in a traditional classroom.

Individualized Learning Centers and their personnel should commit to a philosophy that students will not be permitted to progress beyond a topic until they have demonstrated proficiency in it. In our own experimental/demonstration instructional facilities, ERA insists upon a minimum 80 to 85% accuracy rate from students. To achieve and to verify proficiency, frequent testing is imperative

Under Individualized Mastery Learning conditions, students will decide when they are ready for each test. There are limits, of course; if you find students not working hard enough, or too hard(!), discuss the reasons for your conclusions with them, so they understand that your opinion is not arbitrary.

Most I.I. Programs should include appropriate tests. If not, however -- or if the tests are too few or unsatisfactory -- you may do what we all often must do, and prepare your own. And, like any other part of a subject's instructional materials, you have more time in which to prepare tests which meet all of your needs, than you would in a lecture class.

This, of course, means that a few students may not complete a course within the school year. So be it; better that they learn all of a subject well, than to be exposed to all of it without understanding. In an Individualized Mastery Learning environment, only the end result (of competence in a subject) is important -- where a student acquired that skill and how long it takes are (while not irrelevant) at least of only secondary consideration.

I.I. instructors and supervising Master Teachers should take every opportunity to encourage students to seek help by discussing problems with others, even their peers. Although often physically and/or visually separated, students should not be discouraged from occasionally discussing subjects together, briefly. And the questioning student is not the only one who benefits from the exchange: Students who are asked questions -- sifting through their minds to find a variety of ways to explain answers to others -- improve their understanding of a subject. Formulating answers to diverse questions about a subject causes individuals -- teachers and students alike -- to organize their knowledge into a more logical and coherent pattern. After all, testing will ultimately verify their individual understanding of the subject.

There will be portions of a subject that students will find more or less interesting or difficult; and they may deal with these variables quite differently. Students who take more than one subject in one Learning Center may decide for themselves which subject they study at a given time, just as they may determine their own schedule within a subject. They might choose to spend equal time studying all of their subjects, or more or less time on the subjects they do not care for. At times, of course, it will be necessary to help students "discover" a satisfactory motivation for completing some subjects.

To do so most effectively, teachers should understand as much as they can about the structure of I.I. Programs that students are using. You should systematically "study" each Program, just as students would, using recordings, a headset, and a student syllabus. Thus, you will be better prepared to judge the potential effectiveness of each portion of the program -- where difficulties might be expected and, therefore, where supplementary materials might be required. You can determine the author's approach to each point, understand why students encounter difficulties, consult more constructively and effectively with students, and be more certain about which corrective measures you might prescribe for specific questions and problems.

When you actually go through a Program, think of yourself as a student. Authors must too, and anticipate student limitations and inclinations to ask questions; then try to include appropriate answers in the lecture itself. Certainly, the reaction of a teacher listening to a lecture may be that the program progresses very slowly. But Programs are not designed for a teacher's level of learning and experience; this apparent slowness is only the result of the author's anticipating as many questions and learning problems as possible.

Keep in mind that a Program -- even more than a textbook -- should be designed to meet the learning requirements of the average student. Whether that may in fact be a little fast or slow for some students is something the flexibility of I.I. automatically allows for. Remember, too, that students will be taking notes of the lecture. No matter how slow the lecture seems to you, it is still several times faster than students can take notes. Here, too, any variations in the apparent difficulty of a Program are certain to be comparatively minor, and in any case, your review process can prepare you to adapt for them.

If you develop your own instructional materials, you will find that the narrative is the cornerstone of a good Program. If a Program is well written, students should have fewer questions to ask than in traditional classes. Thus they will learn the subject most thoroughly in the shortest possible time. Teachers, therefore, can fulfill their roles as true instructional specialists -- supervisors, catalysts, analysts, and managers of learning -- devoting time to those students most in need of assistance. As instructional specialists -- rather than mere lecturers -- teachers can deal with the real problems of teaching the student, not merely dispensing information.

We can adopt a more Socratic role in the educational process -- discussing and questioning students, probing the depth of their understanding individually, and breaking down barriers to understanding raised by ignorance or misperception. To do so, teachers must get close enough to individuals to question them, draw them out, probe, prod, and otherwise direct and lead students to get the most from the instructional process...but individually, rather than in a faceless, nameless group.

It simply isn't practical to address individuals when they gather in large groups, John Houseman and The Paper Chase notwithstanding. On the other hand, this is precisely what we have described as a part of a genuinely Individualized installation.

* * *

Individualized Programs are not generally intended as advanced courses or "definitive studies." Each Program you choose should, as a rule, be designed as a basic foundation course...to be later modified and adapted in myriad ways. Therefore, they may be used by students from within a wide range of knowledge and ability because you will adapt it for each.

Everyone learns differently: Some learn quickly, others slowly; some pace themselves well, while others need structure; some require more repetition than others. There is an almost infinite variety in the possible "mix" of audio, visual, kinesthetic, and cognitive stimuli most effective for different individuals.

The unrealized potential of the 60s and 70s fad term, "Individually Prescribed Instruction," finds real meaning for the first time within the I.I. learning system. There is opportunity for educators to alter this "mix" and/or the entire course of study for individual students -- to prescribe remedial or enrichment materials whenever necessary, for any individual.

Don't be afraid to admit to students if you don't have the answer to a question. Unlike conventional facilities, I.I. Learning Centers give all of us time to find the answer with the student. Both parties learn -- and students learn as well that there is no stigma attached to not knowing an answer, only failing to look for one. Your future students will benefit too.

If there is no other alternative, students may use textbooks (or other materials not specifically designed for Individualized use), but they should first have some experience with fully Individualized materials. Since they cannot expect as much support as from Individualized materials, they must be better prepared to study independently and take responsibility for their own progress.

Students should be encouraged to broaden their knowledge of a subject at every opportunity, through additional outside research, reading, and discussion, as long as it does not adversely affect their progress in the basic subject. Every teacher should be prepared to offer suggestions for additional reading in alternate texts, magazines, newspapers, and even popular books. Projects requiring practical application of knowledge, such as work-study/internships are desirable for "real-world" job experience. Of course, those who do wish to acquire a greater depth in their studies are those most motivated and able to pursue investigation independently anyway, but especially if you support their efforts.

A teacher's personal reference library, or that available in or near a Learning Center, becomes an important part of the day-to-day instructional process. When students experience difficulty -- or merely require more exposure to a subject or more practice exercises -- the ILC instructor may refer them to alternative explanations in texts and references other than the primary instructional materials.

For example: In teaching Basic Mathematics in an Adult Education facility, we use an Individualized Instruction Program for all basic instruction. Approximately 50% of our students need little from us, aside from discussing problems and explaining a few difficult topics in a variety of ways. For the other 50%, however, we rely on six or seven texts, workbooks, and kits for alternative explanations and a plentiful supply of supplementary problems and exercises. Even for most students this is only an occasional necessity, but a few may use them more than the primary Program.

Most able teachers, in traditional facilities, use the same techniques; The difference is that we have the time to assess carefully the needs of each student and choose what action we feel appropriate. We're often wrong the first time, but then it only takes a few moments -- of our time and the student's -- to change to another strategy.

The most common reasons for the lack of student progress are:

1) Study habits may be underdeveloped. Students may not know how to take the initiative in learning -- or even wish to. An I.I. Program is not a panacea for learning difficulties -- it merely gives instructors more opportunities to discover their exact nature and take corrective measures. I.I. materials can assist and enhance learning, but the student still needs to study. In fact, under I.I. conditions, students will and must learn to accept responsibility for their own educational progress; they do have to work for whatever they are going to learn.

2) The student may have good intentions, but need help with correct notetaking and outlining techniques -- learning what is important to remember, and what is not.

3) The student lacks the required background, generally in the basic education subjects of math, English, spelling, reading, social studies, or science. Obviously, some subjects are a prerequisite for the study of others. Too many students today have been (and are being) promoted before they acquire even basic skills, much less have a well developed understanding of a subject.

4) The student may be incorrectly using the Program, without either the audio narrative or syllabus, and not be pinpointing and connecting the most important ideas and concepts that the instructor/author wants recognized.

In many cases, a single "run-through" of the audio will not be enough. For some students, even two or three times through, in some portions of a course, may not be enough. The information is there, students must understand that despite any help they receive from you, ultimately only they can learn it; You cannot do it for them.

How long, then, might it take students to complete a lesson? Well, some of the longest-lived Individualized Learning Centers in the country have found that one lesson every two or three days is satisfactory.

This has even been confirmed by working backwards from what schools consider to be the content for one year of a subject. Depending upon variations in content and lesson length among publishers, a full high school year is usually equivalent to 55 to 65 (ERA-designed) lessons. As the average public school year is approximately 180 days, this works out to be very close to one lesson every three days. Most able students will do so easily; and even slower students -- who can receive more assistance than at any previous time in their school careers -- can complete the subject too.

This does not take into account homework which might be assigned, but then with students on completely different lessons, teachers often find it difficult to schedule such a thing. Perhaps the most satisfactory solution for teachers who expect more from their pupils is to let students know that; and let them know that homework should be a regular means to achieving that goal. Push students to achieve as much as possible; provide them with every assistance possible; but understand that there are always exceptions which will require unique solutions.

If, after they complete an Exercise or test, teachers find that students do not have a satisfactorily complete understanding of some topics, they return to the notes in their syllabus, or even the lecture, and review the appropriate portion(s). Students should add to or correct their notes, then review or rework the exercise questions or problems. Should they still have trouble understanding, we analyze that individual's difficulty and prescribe appropriate corrective study. Purchase or prepare materials with enough tests so that you have 2 or 3 to choose from, over each topic, and can retest students for mastery after each such occasion.

Periodic discussion with students is very important. You should consult with each of them regularly, as well as whenever they seem to need special help. You should determine whether or not an individual is making a genuine effort to learn, or attempting to evade his/her responsibility.

You need to be careful that students do not use the "unconventional" I.I. methods of instruction as an excuse for their lack of progress, or their inability to understand. From

the student's (subjective) point of view, the difference is that conventional teaching methods place the burden for his/her learning on instructors, whereas I.I. methods place it on the student's own shoulders...where psychologists agree that it belongs. Naturally, mentally lazy students do not want to assume this responsibility, and will tend to blame the system for their lack of progress.

Many students today manifest their frustrations with the present system through disruptive or violent behavior. Under I.I. conditions, it is both more difficult for one student to disrupt others (some simply refuse to be interrupted) and easier for you to take action (for the same reason). The latter is much easier under I.I., in fact, because you spend more time observing and working with students . . . through which you might acquire an awareness of an individual's propensity for mischief.

Many well meaning, but uninformed, parents may side with their children, unless you clearly explain I.I., its rationale, and its benefits. Students may even express preference for traditional methods -- by which they mean the more comfortable "lecture method," which places most of the responsibility for learning on the teachers. This leaves many students free to fold their arms and look out the window -- not learning, but present where people may point to them and say, "they were in class" -- in body, if not in spirit. I.I. instructors, however, can help students learn to regulate their own study habits better. By learning to take more initiative themselves, students become better prepared for a real world in which initiative is at a premium.

This is where yet another innovation of the past can find new life in an Individualized facility. Educators siezed upon the idea of "Learning Contracts" or "Performance Contracts" years ago, but their use never really caught on. They were just another example of paperwork that multiplied faster than did our ability to keep up with it. But Individualized Learning Center instructors have the time to diagnose students' problems or weaknesses. If early attempts to ameliorate them fail, teachers must consider whether more structure might be helpful to an individual . . . for a time.

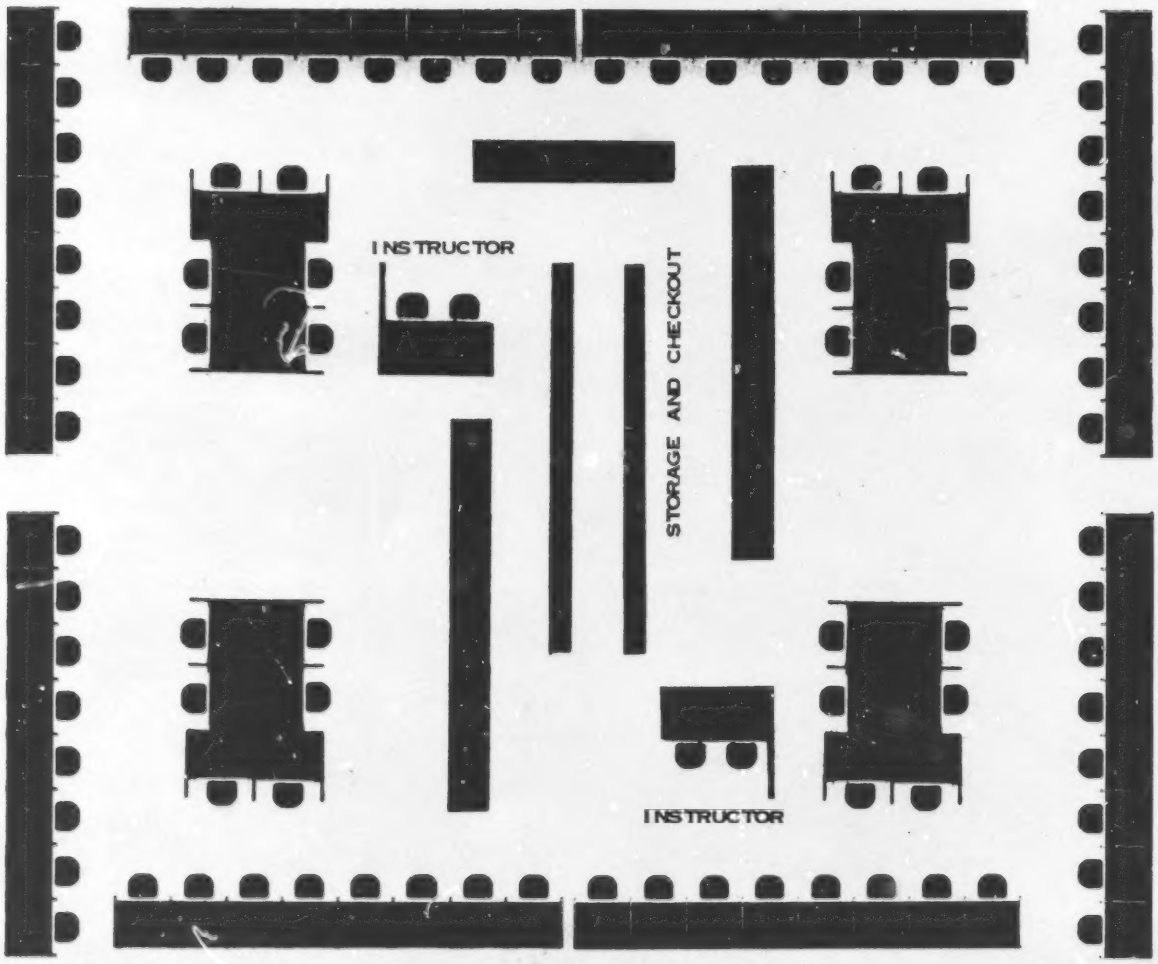
Some students need a more structured environment which demands they produce. The solution may be to give them a measure of structure as you try to teach them to demand of themselves what they must. If so, the teachers may write Learning Contracts for individuals, often after consultation with parents. ILC supervising instructors can follow up on performance of that agreement to determine whether it has been successful, and whether to extend its use for longer, include other subjects, or terminate it and search for some other solution.

A cousin of the Learning Contract is the "Individualized Educational Plan" -- required for many handicapped students under P.L. 94-142 (and extended to others as well) -- except that IEP's specify what the school must do.

An IEP is most often written to describe what the school and instructor plan to do to help the student. In fact, it is not very practical because it assumes responsibility for more than it can reasonably guarantee: How do you know in advance exactly what difficulties a student may encounter? Better to use some hybrid of these two, which specifies precisely what the school will do, and what the student's performance should be, but leaves some room for instructors to alter their techniques.

An Individualized program takes responsibility for the necessary but often routine dissemination of information -- over and over and over, as often as needed -- without tiring and becoming ineffective. It does this whether a student is "average," gifted, or handicapped. In Individualized environments, it is less important where exceptional students receive their instruction, as long as teachers have the freedom to dedicate an appropriate amount of time to the success of each individual. This is the spirit of P.L. 94-142, and should be the basis for operation of any competent instructional installation, regardless of the number or ability of students it serves.

You and I know that problems change as quickly as time passes: one day a student will have one problem, and the next it will be completely different. It's time our educational system recognized that fact, and learned to respond with methods appropriate to infinitely changing circumstances.



Public Relations for Individualized Mastery Learning Centers

So...now you know how to organize your Individualized Learning Center. However, it is often more difficult to deal with those outside of your Learning Center -- teachers, administrators, school board members, and parents -- than with the worst of your problem students within it. They will raise questions and voice doubts about its operation and effectiveness to which you must respond. Following are suggestions and advice regarding issues which relate to the relationship between Learning Centers and "the outside world."

To summarize ERA's Individualized Instruction concepts, they differ from traditional models in two ways:

1) Decreased reliance upon instructors as rote lecturers, and
2) The degree of autonomy given to each student.

We have covered both earlier, but, to review:

*Teachers are more valuable working with students than talking at them; therefore, any methods used to minimize time spent preparing and presenting lectures, and to maximize student-teacher interaction are fair.
*Just as important is the speed at which students receive information...ideally, neither faster nor slower than each is capable of assimilating it.

It simply isn't possible to individually tailor instructional lectures under traditional conditions. We cannot, after all, make someone learn who does not wish to...especially by long distance, from the front of a classroom. But through closer supervision and support from Learning Center teachers, every student will achieve much closer to his or her own potential.

Nevertheless, because students all learn at different rates, some students will not complete a course within a school year. Some will complete 1 1/2 or even 2 "years" of study in a single school year; others might complete just 3/4 of a "year" in the same time. How will we deal with these students? Today all are often equally penalized for not conforming to the norm -- for not being "average" (whatever that is). In fact, learning speed often corresponds very little with actual potential or ability in applying that knowledge in the real world.

Many schools deal with this problem only by evading it -- by not permitting some students to progress faster than others, or by requiring slow students to retake courses. And this bears precious little resemblance to the world outside of school, where a premium is placed on individual initiative, motivation, and productivity; people often don't get a second chance.

Users of Individualized Mastery Learning techniques, then, must deal with the question more satisfactorily now, if the

consequences are not to haunt us in the future. We must develop systems of granting credit to students, regardless of how long they take to acquire their skills. Remember, mastery of what they have completed is of paramount importance.

For the majority of schools which still conform to an eight-month school year, the most sensible method is to divide subjects into the smallest units practical -- say 1/4 of a full year of "credit" (or smaller if possible). Students receive credit for that portion of a course they have completed, whether that is 3/4 of a single subject, or all of it, plus part of another. This need not be difficult: Schools already have many one quarter or semester courses; they need only divide longer courses into similar fractions of credit as well.

Students already change from one to another of these shorter subjects, in the middle of a school year; we merely need to make some provision for ILC students to do so, even in the middle of a term, and regardless of how long the subjects are. Why not?...doing so doesn't affect anyone else, and does maximize what each student can accomplish.

For this to be possible, clearly there must be more than one subject offered in your Learning Center. But how many subjects might be the maximum a Learning Center can offer? For that matter, how large might a Learning Center be?

A Learning Center can be as small as economy will permit, serving just one subject and maybe 20 students. But there is no theoretical upper limit on the size of a genuine Individualized Learning Center. The largest number of students served by a single instructor -- to ERA's knowledge -- is 75. In other Learning Centers there may be 80 to 200 students or more, served by 2 to 5 instructors, plus an aide.

Individualized Mastery Learning methods are practical for any size school, but especially so where school enrollments cannot economically justify an instructor's time in certain subjects. Rather than discontinue a subject from your curriculum, include it as a subject your Learning Center offers, as long as instructors there are capable of supervising students.

Yet, it may at times even be acceptable to offer a subject for which you have no "qualified" instructor. Certainly it could be preferable to completely denying students the opportunity to study a subject.

Many teachers, of course, have faced the problem of learning a new subject "cold"...keeping only a few lessons ahead of students. I.I., at least, can minimize this necessity. But when it does arrive, I.I. teachers have the time to do justice to their own "course of study." Their greater educational experience, at least, has prepared them to cope more effectively than students.

There are even examples of students surpassing teachers and themselves becoming the "teacher's teacher" in such a new, unfamiliar subject. Why? Because to both student and teacher -- caught up in the excitement of stretching the bounds of their knowledge -- traditional roles become less important. Don't misunderstand: The teacher is still the supervisor -- still uses his/her greater knowledge to control how far a student may digress from the basic course of study.

Most often, however, because Learning Centers can offer several supervising teachers in a single installation, at least one will be likely to have <u>some</u> knowledge of a subject. Learning Center teachers can use each other as resources in the same way they use a reference book; any group of three or four individuals, after all, can prove to be an amazingly diverse pool of talents. But when all else fails, if ensuring that students learn includes doing so ourselves <u>with</u> them, then that's what we need to do.

For fully Individualized installations or schools, the logical, ultimate goal should be to do away altogether with the "Carnegie Unit" used for granting credit to and assessing the progress of students. The Carnegie Unit is a creaking, antiquated holdover from days when farming was our principal national industry and today's available technology wasn't even a dream. Students receive credit based upon the <u>time</u> they spend in school, <u>not</u> how well they <u>understand</u> any of their subjects.

But our culture is no longer a primarily agricultural one. Summer is no longer the <u>only</u> time students can be out of school, nor necessarily even the best time. Witness the massive teenage unemployment during summers, because so many students are out of school at the same time. Fully Individualized schools can easily operate year 'round, accommodating students' family vacations and working hours without the slightest difficulty. It is more important <u>what</u> students learn than when or how long it takes them to do so.

Despite all you have read here, perhaps the most common teacher response is "This sounds just wonderful for <u>some</u> subjects, but of course it wouldn't be appropriate for <u>mine</u>." If you buy this, you will soon find that there are <u>no</u> subjects that <u>are</u> appropriate.

How many subjects actually <u>can</u> be Individualized? (See chart) Certainly, some subjects are better suited to ILC methods than are others. And to the extent that any subject requires some degree of group activity, it is less than 100% appropriate for I.I.

Some subjects, such as Physical Education and Music, require a group activity beyond simple skill development; some like Industrial Education and Driver's Education must limit independence in order to minimize insurance liability. Special Education can be almost completely Individualized; but depending upon the students, may require a lower student/teacher ratio than would otherwise be acceptable in a Learning Center. But <u>none</u> are

without some potential -- i.e. completely incapable of being Individualized.

In any case, these departments all consititute relatively small portions of a school's budget, and thus have little effect on the ultimate benefit realized from proper use of I.I. methods.

Society is learning that the costs for supporting its ill-educated members are not measured merely in terms of direct social welfare expenditures, but also in lost productivity and retraining costs in the business community. It is better to be certain that students at least learn to do a few things well, than to graduate students who do many things (or everything) poorly. Every student -- and society at large -- must be assured that if the school states that a student has completed a specific amount of a subject, he has, indeed, done so, with mastery.

SUBJECT MATTER AREA	% OF INSTRUCTIONAL BUDGET	ESTIMATED % APPROPRIATE FOR I.I./L.C. SYST.
AGRICULTURE	0.4	80.00
ART	2.9	85.00
BUSINESS EDUCATION	4.3	100.00
ENGLISH	24.7	95.00
FOREIGN LANGUAGE	4.4	85.00
HEALTH AND PHYSICAL ED	9.2	50.00
HOME ECONOMICS	3.5	90.00
INDUSTRIAL ARTS	3.6	90.00
MATHEMATICS	15.3	100.00
SCIENCE	11.5	100.00
SOCIAL STUDIES	14.5	90.00
MUSIC	3.7	50.00
SPECIAL ED.	0.3	10.00
DRIVERS ED.	0.8	25.00
VOCATIONAL ED.	0.9	50.00
TOTAL CURRICULUM	100.0 %	87.7%

We cannot be satisfied with half measures. With an eye to future generations, educators must always play the pessimist: For us, the glass must always be "half-empty." We cannot be satisfied to pass students along with D's and C's, or even many of the B's we issue. We cannot say to ourselves with any satisfaction "This student understands 75% of the subject," but instead we must say "This student doesn't understand a full 25% of the material."

Therefore, without exception, we must also optimistically hold the conviction that each and every student can succeed in learning what we wish of them. (And this is not merely a meaningless posture -- they can.) Undoubtedly, we will fail at times, but that is neither reason nor excuse for us to do any less than our best at all times.

One teacher in a juvenile detention facility observed that students all came with five pounds of documentation which absolutely and irrefutably proved that they could not learn. She nevertheless also noted that she had yet to fail to teach them to read, given sufficient time, and liberal doses [of roughly

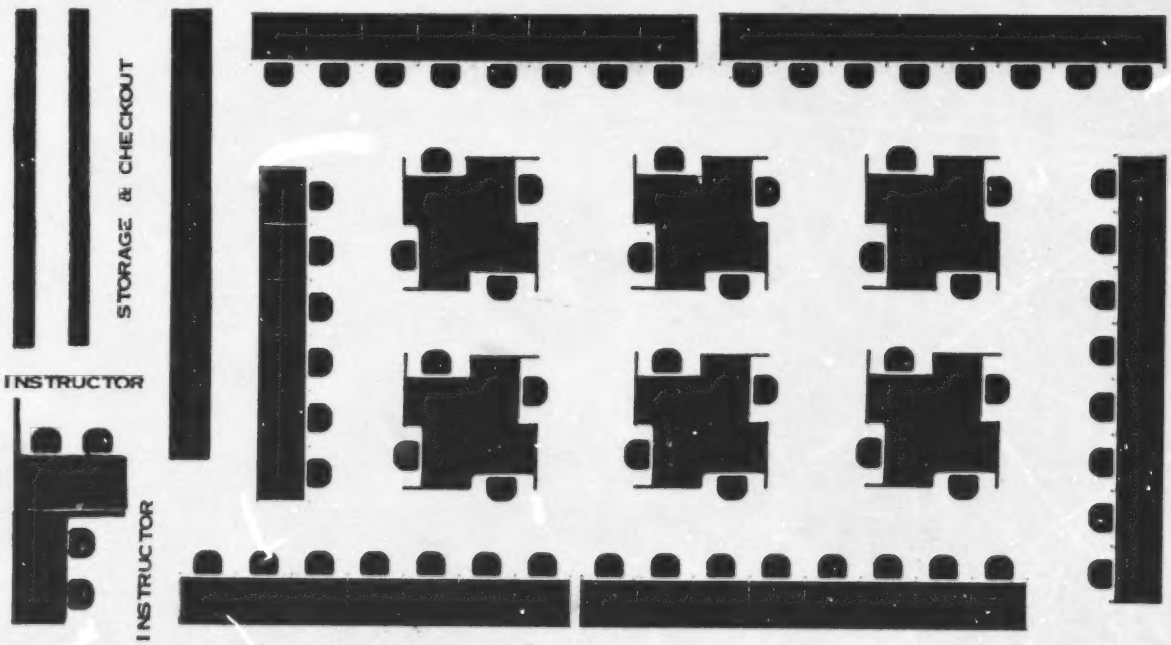
equivalent size] of affection and discipline. Individualized Instruction is merely a means to maximize a teacher's effectiveness in doing so.

Unquestionably, if we succeed in thus teaching every student, we are going to be handing out a lot of "A" grades. (Although too many do that now, with too little reason.) We must therefore alter our perception of the meaning of those grade...from a comparative assessment of students to an absolute measurement of their understanding and mastery over a subject. Ultimately, then, a measure of our own effectiveness as educators will necessarily include how well our students achieve...now that we are in a position to do something about it.

Our present educational system evolved only -- in the absence of a better alternative -- out of a necessity to handle a large number of students. But viable alternatives such as Individualized Mastery Learning do exist today, except that teachers are often constrained from using them by the rigid structure of school years, credit requirements, and daily class scheduling within our contemporary system. In an Individualized facility, however, our curriculum need not be considered to be etched in stone.

By eliminating that most inefficient portion of teachers' time, they...you...we are given in exchange a wondrous gift -- time. Time to use any technique, resource, or contrivance to ensure the success of each individual student. We have before us an opportunity to realize our ideal: Devoting ourselves to observing, evaluating, and prescribing for one and only one student at a time.

Thus, Individualized Instruction will fundamentally change the face of contemporary education, enabling us to adapt education to most effectively meet the needs of every student. We will begin to teach in a manner better suited to today's complex demands (of a diverse technological culture) than those methods and techniques previously used throughout the history of mankind.



Suggested Readings

Because of the widely held but erroneous beliefs about the nature of Individualized Instruction, there is regrettably little published work which is consistent with ERA's I.I. methods. The titles listed below contain information which may be of assistance to you in "fleshing out" the methods discussed here, even if we cannot endorse their contents unreservedly. If you have studied this Guide carefully, you should be quite able to determine which of an author's suggestions are appropriate and which are not. For example, while many of the observations of John Holt and Herbert Kohl are insightful and quite valuable, they consistently err on the side of too little supervision and direction for students who are not really mature and knowledgeable enough to decide what they should or should not study.

"Black Education and The Inner City" The Lincoln Institute for Research and Education, 1981

"Black Education: Myths and Tragedies" Thomas Sowell. David McKay Co. Inc., 1972, 1974.

"The Carnegie Unit - an Administrative Convenience but an Educational Catastrophe!" Carl W. Salser. Educational Research Associates, 1980.

"Compelling Belief: The Culture of American Schooling" Stephen Arons. New Press/McGraw-Hill, 1983. (SEE - "Home Schooling" and "Who Says Vouchers Wouldn't Work?", REASON Magazine)

"Deschooling Society" Ivan Illich. Harper & Row, 1970. (Beware, and don't waste much time beyond Chapter 3)

"The Emerging Science of Individualized Instruction" John Lindelow. ERIC Clearinghouse of Educational Management, University of Oregon, 1983. (VERY good)

"Ethnic America" Thomas Sowell. Basic Books, Inc., Publishers, 1981.

"Free to Choose - A Personal Statement" Milton & Rose Friedman. Little, Brown & Co., 1979, 1980. (Chapter 6)

"Home Schooling: Up from Underground" Gerald M. King. pp. 21-29, REASON Magazine, Apr. 1983.

"How Children Fail" John Holt. Pitman Publishing, 1964.

"How Children Learn" John Holt. Pitman Publishing, 1967.

"Human Characteristics and School Learning" Benjamin S. Bloom. McGraw-Hill, 1976.

"Hunger of Memory - The Education of Richard Rodriguez" Autobiography. David R. Godine, Publisher, Inc., 1982.

"Individualized Instruction Newsletter, Volumes 1 - 8" Educational Research Associates, 1975-1983.

"Individualized Instruction -- Programs and Materials" James E. Duane, Ed., Educational Technology Publications, 1973.

"Individualized Mastery Learning" Educational Leadership, 1979

"Individualizing Business Education Instruction" (Chapter 4 of Alternative Learning Styles in Business Education) pp. 54-82, National Business Education Yearbook #17, 1979.

"Less Than Words Can Say" Richard Mitchell, Glassboro (NJ) State College. Little, Brown & Co., 1979.

"Make Your Schools Work" Harvey B. Scribner and Leonard B. Stevens, Simon and Schuster, 1975.

"Marva Collins' Way" Marva Collins & Civia Tamarkin. J.P. Tarcher/Houghton Mifflin Co., 1982.

"Modernizing the little red schoolhouse" Edward J. Willet, Austin D. Swanson, Eugene A. Nelson, Educational Technology Publications, 1979. (esp. Ch. 6)

"The Open Classroom" Herbert R. Kohl. The New York Review, 1969.

"Pygmalion in the Classroom" Robert Rosenthal and Lenore Jacobson, Holt, Reinhart and Winston, 1968.

"Reality Therapy" William Glasser, M.D. Harper & Row, 1965.

"The School Book" Neil Postman and Charles Weingartner, Delacorte Press, 1973 (esp. Ch. 8)

"Schools Without Failure" William Glasser, M.D., Harper & Row, 1969.

"Student Motivation in the Self-paced Business Program" Bruce E. Herbert, Waldport (OR) High School. pp. 27-30, Journal of Business Education, October 1982.

"Student Records: Manageable or Unmanageable?" Bruce E. Herbert, Waldport (OR) High School. pp. 24-26, Business Exchange, February 1983.

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ISBN 0-89420-236-7